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UNITED STATES
DEPARTMENT OF THE INTERIOR

FINAL
ENVIRONMENTAL STATEMENT
Volume 3 of 3

Proposed
1974 OUTER CONTINENTAL SHELF
OIL AND GAS GENERAL LEASE SALE
OFFSHORE LOUISIANA

OCS SALE No. 36
FES 74 –41

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Prepared by the
BUREAU OF LAND MANAGEMENT

Director

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#21774650 ID:88076076 TD 195 .P4 L684 1974b v.3

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X. CONSULTATION AND COORDINATION WITH OTHERS

Introduction

This section presents an account of the consultation and coordination processes involved in the preparation of the draft environmental statement (DES) which was made available to the public on May 1, 1974, the period of review of the DES, and steps leading to the preparation of the final environmental statement (FES). All official review comments of the DES are attached, and where appropriate, the disposition of pertinent comments leading to the preparation of the FES are indicated.

A. Preparation of the Draft Environmental Statement

1. Federal Participation

In the preparation of the DES for OCS Sale #36, data and review comments were solicited from the following Bureaus and offices within the Department of the Interior:

- Geological Survey
- National Park Service
- Bureau of Outdoor Recreation
- U.S. Fish and Wildlife Service (formerly Bureau of Sport Fisheries and Wildlife
- Bureau of Mines

In addition, the following agencies and Departments were consulted during the preparation phase of this environmental statement:

- Environmental Protection Agency
- Department of Commerce
- Department of Transportation
- Federal Power Commission
- Atomic Energy Commission

2. State Participation

In the preparation of the environmental statement the following offices within the State of Louisiana were contacted for advice and data:

The Commission on Intergovernmental Relations

Louisiana Wildlife and Fisheries Commission

Department of Conservation

B. Coordination and Review of the Draft Environmental Statement Leading to Preparation of the Final Environmental Statement

After the draft statement was prepared, copies were made available to Federal and State governmental agencies and the public. Comments and views were solicited from governmental agencies relative to the draft statement and the proposed action.

In addition, comments and advice were solicited from the public at large, through formal and informal correspondence, and at a Public Hearing held on June 5, 1974, in New Orleans, Louisiana.

1. Federal Agencies

The following section contains all comments of Federal agencies from whom review comments of the DES were received. Where appropriate, the disposition of their comments is indicated and any unresolved issues are identified. Remarks of this nature precede actual presentation of the review agency comments. In this way, we hope that the Department's responses to many of the issues raised can be easily located and oriented to the agency who brought the issue to our attention in the first place.

a. National Park Service

The comments offered by the National Park Service were concerned primarily with the accuracy of our identification of NPS units in the sale area and with measures taken to protect historical and archeological resources.

Disposition:

Vol.1

p.22--After further consultation with the National Park Service, it was considered appropriate to delete reference to this park.

p.24--We have updated park use figures with the information supplied.

p.74--The new sites included in the National Register have been added as recommended.

p.330-The bibliographic entry has been corrected.

Vol. 2

p.78--It has been indicated in the text here that the stipulation of cultural resources (Sec. V) will be attached to BLM permits for pipelines.

p.183-We have noted in the text that the surveys required by the cultural resources stipulation should keep the occurrence of such damage to a minimum.

p.190-We have so indicated in the text.

5541

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:
L7619

JUN 17 1974

Memorandum

To: Director, Bureau of Land Management

Through: Assistant Secretary for Fish and Wildlife and Parks

From: Associate Director

mailed for 6-17

Subject: Review of Draft Environmental Statement Concerning a Proposed Oil and Gas General Lease Sale Offshore Louisiana (DES-74/49)

Here are our comments on the subject document requested by Assistant Director, Minerals Management, Frank A. Edwards.

COMMENTS ON THE ACTION

The proposed lease sale and the subsequent routine operations of the mineral development and production activity will not adversely affect any existing, proposed or known potential unit of the National Park System, or any known historic, natural or environmental education sites eligible for the National Landmark Programs.

COMMENTS ON THE ENVIRONMENTAL STATEMENT

Volume 1

Page 22

In the identification of potential new areas, change Jean Lafitte National Cultural Park to Jean Lafitte National Historical Park.

Page 24

Last year's and estimated future visits to National Park Service units in the Gulf of Mexico may be updated in the final statement as follows:

JOHNNY HORIZON '76
Let's Clean Up America For Our 200th Birthday

	Recreational Visits in Fiscal Year 1973 2/	Estimated Visits in Fiscal Year 1977
Padre Island	907,700	1,289,000
Gulf Islands	454,900 3/	1,494,000
De Soto National Monument	147,500	164,000
Everglades	1,710,200	2,167,000
Ft. Jefferson	5,300	23,000
Chalmette	286,000	496,000

2/ Public use of the National Parks, National Park Service, Department of the Interior, Fiscal Year Report - 1973.

3/ January 1, 1973 to June 30, 1973.

Footnote 4 may be deleted.

Page 74

The following sites may be added to those on the National Register of Historic Places and added to the maps:

1. Darby Plantation (New Iberia)
2. Jefferson, Joseph House (Delcambre vicinity)
3. Oaklawn Manor (Franklin)
4. Southdawn Plantation (Houma)
5. Acadian House (St. Martinville)

New Orleans and vicinity:

6. Bank of Louisiana
7. U. S. Court of Appeals, 5th Circuit
8. Old U. S. Mint
9. Gallier House
10. Perserverance Hall
11. St. Charles Line
12. Rabassa House
13. St. Alphonsus Church
14. Turpin-Kofler-Buja House

The first paragraph below the listing could be updated to January 1, 1974 by referencing to Federal Register of February 19, 1974.

Page 330 - Sixth entry

Update to: National Park Service, 1973. National Register of Historic Places, 1973, U. S. Department of the Interior, Washington, D. C.

Volume 2

Page 78, paragraph 1

A further mitigating measure would be to avoid, if possible, impacting areas where submerged valleys intersect old shorelines. The only sure way to determine and then avoid impact is an on-the-spot survey.

Page 183 - second paragraph, last sentence

The reason for considering the incidence of occurrence to be low should be supported by data or the assertion should be deleted.

Page 190 - VIII

The disturbance of archeological sites would constitute an irreversible and irretrievable commitment of such non-renewable resources.

b. Bureau of Outdoor Recreation

BOR's comments were primarily concerned with the identification of recreation resources in the area.

Disposition:

Vol. 1

p.22--We have deleted reference to Jean Lafitte Park as a National Park.

p.268-The wilderness status of a portion of Louisiana National Wildlife Refuge has been acknowledged in tha statement. It is our opinion that the discussion of impacts on conservation areas (Sec. IV. H. 4.) identifies the impacts that could effect wilderness areas.

Vol. 2

p.80--BOR's suggestion concerning modification to offshore structures to aid recreationists has again been included. However, we feel that the encouragement of recreational use of pipeline canals might lead to greater environmental risks, in that the danger of erosion, disturbance of wildlife, and the risk of damage to pipelines would all be increased.

United States Department of the Interior

BUREAU OF OUTDOOR RECREATION
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

DES-74/49

JUN 25 1974

Memorandum

To: Director, Bureau of Land Management
Attention: Division of Marine Minerals (732)

From: Director, Bureau of Outdoor Recreation

Subject: Comments on Draft Environmental Statement Concerning a Proposed Oil and Gas General Lease Sale Offshore Louisiana (OCS Sale No. 36) (DES-74/49)

This is in response to your memorandum request dated May 8 for our review of the subject draft environmental statement. The following comments are offered for your consideration in the preparation of the final statement.

We believe the statement on the whole adequately addresses the recreation environment and the potential impacts of the proposed lease on existing recreation resources. Some concerns which might be considered in the final statement include the following.

The Secretary of the Interior has decided against further consideration of Jean Lafitte as a National Park (Vol. I, p. 22). There is considerable support, however, for development of the areas as a State Park.

The Bureau of Sport Fisheries and Wildlife has proposed a 3,300-acre unit of the Lacassine National Wildlife Refuge be designated a National Wilderness Area (Vol. I, p. 268). The statement notes the wilderness consideration at Breton NWR but not at Lacassine NWR. A discussion of the impact of offshore leasing for oil and gas on wilderness areas as defined by the Wilderness Act was not included in Volume II.

The inventory of potential Natural Landmarks in Louisiana's Coastal Region should include the Ponchatoula Marsh just north of Lake Pontchartrain; the Honey Island Swamp near the mouth of the Pearl River; and the Buffalo Cove Area of the Lower Atchafalaya Basin (Vol. I, p. 275).

All of the sites mentioned in this review, plus many additional private and locally administered recreation sites along the Louisiana Coastal

Area are specifically identified and pinpointed on the detailed map and accompanying inventory transmitted to you by our memorandum of September 24, 1973.

As mentioned in the review of a previous lease proposal we again suggest minor design modifications on fabricated rig structures be added to facilitate sport fishing and scuba diving (Vol. 2, p. 80). Additionally, any considerations incident to pipeline construction which could accommodate onshore and waterway trail use potentials may serve as a mitigating measure to such activity. As access to the coastal resource is one of the greatest needs in Southern Louisiana, any considerations for trail use on oil and gas pipeline rights-of-way could serve as a primary resource besides being a major recreation support measure.

c. U. S. Fish and Wildlife Service (formerly the Bureau of Sport Fisheries and Wildlife)

This agency submitted substantive comments concerned primarily with the accuracy of the description of the environment. However, some of their comments have to do with the impact of pipeline construction and other phases of OCS oil and gas operations.

Disposition:

Vol. 1

p.143,para.1--This description term has been corrected as suggested.

p.147,para.1--Language in the text has been changed in accord with the comment.

p.148,para.2--Additional sources of nutrients have been identified as suggested.

p.151,para.1--The beneficial aspects of alligatorweed have been included as suggested.

p.152,para.2--The recommended change has been made in the text.

p.153,para.1--The first part of the comment has been included along with the original text. Correction have been made as suggested.

p.158,para.2--This fact has been noted in the text.

p.159-- We have included the recommended acknowledgement.

p.178,footnote--We have noted this in the footnote.

p.180,para.2--These two species have been included.

p.180,para.3--The suggested notation has been made. The reference cited in the second part of this comment has been deleted.

p.188,para.3--The information supplied in this comment has been included in the text.

p.213,para.3--Mention has been made of the importance of the menhaden harvest in these areas as suggested.

p.255,para.3--This change has been made.

p.268,para.6--Mention of this species has been deleted.

p.95,Fig.39--The additional areas of Rangia harvest have been noted.

p.370,para.2--As a result of this comment, inquiries were directed to industry spokesmen. The information we have received indicates that oil and water contaminated with acid which result from acidizing operations are transported to the refinery as is uncontaminated production. In the case of test production from an exploratory well it may be barged, in the case of production from a producing platform, it would be transported by pipeline to the refinery by which time the acid would be virtually undetectable. The text has been revised to indicate this.

p.384,Tab.46--Although information from this column was collected from various sources, it is largely substantiated by results of toxicity tests recorded in Falk, M. R. and M. J. Lawrence, 1973. Acute Toxicity of Petrochemical Drilling Fluids Components and Wastes to Fish. Tech. report series # CENT-73-1. Resource Management Branch, Fisheries and Marine Service, Dept. of the Environment, Freshwater Inst. Winnipeg, Manitoba.

p.387 & 388--The possible impacts of pipeline "floatation" canals have been added to this discussion.

Vol. 2

p.3,para.4--This comparison has been deleted since some access canals in the marshlands may be similar in dimension to a large pipeline flotation canal.

p.6,para.5--The impacts of pipeline "floatation" canals have been noted at this point.

p.21,para.2--It is our opinion that 700 tons of cuttings could reasonably be contained in the 100 foot circle noted in this survey. However, we do not intend to imply that this is the final extent of drill cuttings that may result from a normal production platform. We feel that the amount of cuttings generated by a multi-well production platform could cover a larger area -- we have revised this section to reflect this opinion.

p.25,para.1--The text has been corrected as suggested in this comment.

p.109,para.2--We agree that extensive and reliable surface current data along with other data such as slick geometrics, natural dispersive forces, etc. are needed to develop a reliable oil spill simulation model. Since this data is unavailable at the present we have attempted to estimate, for the various areas involved, the rate at which an oil spill will move in the direction of shore based on the observed responses of oil spills to the direction and speed of the wind.

We are not attempting, based on wind data alone, to predict exactly where an oil spill will come ashore, since we recognize that numerous other factors, including current speed and direction, must be considered

when attempting to make such a prediction. The proximity number, based on the distance from the tract to the nearest point on shore, indicates the shortest possible time it would take an oil spill to reach shore resulting from the driving force and direction of the wind. It does not negate the possibility that a spill could also reach other more distant points on shore or coastal resources.

ADDRESS ONLY THE DIRECTOR,
BUREAU OF SPORT FISHERIES
AND WILDLIFE

United States Department of the Interior
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
WASHINGTON, D.C. 20240

In Reply Refer To:
FSF/EA
DES 74/49

JUN 6 5/4

Memorandum

To: Director, Bureau of Land Management
Attention: Division of Marine Minerals (732)
Acting Associate

From: Director, Bureau of Sport Fisheries and Wildlife

Subject: Draft Environmental Statement - Proposed 1974 Outer Continental Shelf Oil and Gas General Lease Sale Offshore Louisiana, OCS Sale No. 36, DES 74-49

In accordance with Mr. Edwards' May 8 request we have reviewed the above-cited draft statement and offer the following comments.

The draft statement is generally comprehensive in its coverage of the existing environmental setting and in its prediction of the probable impact of the proposed action. Several items are listed below, however, which will aid in the preparation of the final statement.

Special care should be taken when noting common and scientific names of organisms, especially for fishes, plants, and birds. Numerous misspellings of these names appeared throughout the draft statement, and different common names were sometimes used for the same species. Standardization would also add to the quality of the final statement. References useful in this regard are:

1) American Fisheries Society. 1970. A list of common and scientific names of fishes from the United States and Canada. American Fisheries Society Special Publication No. 6. 150 p.

2) Correll, D. S., and H. B. Correll. 1972. Aquatic and wetland plants of the southwestern United States. U.S. Government Printing Office, Washington. 1777 p.

3) American Ornithologists Union. 1957. Checklist of North American birds, fifth edition.

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

VOLUME I

Page 143, para. 1

The term "Chenier" should not be used alone to describe the marsh-ridge complex of southwestern Louisiana. "Chenier Marshes" or "Chenier Plain" is considered appropriate. A chenier is actually a stranded beach ridge which usually supports upland vegetation.

Page 147, para. 1

It is doubtful that intermediate marsh actually "...buffers the vegetation of brackish marsh and the true freshwater marsh plants." It is more appropriate to say that intermediate marsh is a zone of transition or ecotone between brackish and freshwater marsh.

Page 148, para. 2

It is also probable that nutrients are supplied to freshwater marshes by storm surges from adjacent intermediate, brackish and saline marshes.

Page 151, para. 1

Although alligatorweed is often considered a pest plant and of little value as waterfowl food, some of its beneficial uses should also be noted. These include food for deer, nutria, and commercially important crawfishes, house building material for muskrats, preening sites for wintering waterfowl, and basking sites for the American alligator.

Page 152, para. 2

The statement that "...the saltmarsh vegetation such as oystergrass is not directly used by waterfowl..." is not totally factual. Although saltmarsh cordgrass (oystergrass) is not a preferred waterfowl food in coastal Louisiana, it is frequently grazed by wintering geese on such areas as Delta National Wildlife Refuge.

Page 153, para. 1

Grain is not the preferred food of geese in coastal Louisiana; shoots and rhizomes of young grasses and sedges are actually preferred. Line 4 of this paragraph also apparently contains a

confusing omission between the words "waterfowl" and "widgeon." The statement that the mallard "...feeds on...submerged eelgrass..." is also in error with regard to Louisiana, since eelgrass does not occur there.

Page 158, para. 2

It should be noted in this section that the only known nesting colony of the threatened eastern brown pelican in Louisiana is located near Grand Terre Island.

Page 159

This section should acknowledge the proposed inclusion of a portion of Isles Dernieres in the National Wildlife Refuge System.

Page 178, footnote

Recolonization of "eatout" ponds is sometimes quite rapid, and may involve submersed aquatic species such as widgeongrass (Ruppia maritima) or the original plants such as saltmeadow cordgrass (Spartina patens).

Page 180, para. 2

Sports game listed as occurring in southern Louisiana should also include the swamp rabbit (Sylvilagus aquaticus) and the eastern cottontail (Sylvilagus floridanus).

Page 180, para. 3

It should be noted that deer also are found in substantial numbers in the coastal marshes proper, and not only in the lower Mississippi-Atchafalaya bottomland forest.

The area "...which comprises about 5,500 acres..." and which may be "...the best squirrel range in the United States..." should be specifically identified.

Page 188, para. 3

It is true that Lakes Pontchartrain and Maurepas contain large numbers of brackish water clams (Rangia cuneata). However, these clams are also abundant in Four League Bay, Atchafalaya Bay (northwestern portion), East Cote Blanche Bay, West Cote Blanche Bay, and Vermilion Bay. Organisms known to ingest these clams, other

than the freshwater drum and black drum cited in this section, also include gars, blue catfish, spot, croaker, pinfish, flounder, gizzard shad, and river shrimp.

Page 213, para. 3

Although it is acknowledged that the waters around the Mississippi River delta support a productive menhaden fishery, mention should also be made of the tremendous menhaden harvests which occur near central and western Louisiana ports such as Morgan City, Dulac-Chauvin, and Cameron.

Page 255, para. 3

The statement that "Most of the ducks killed were mallard..." should be changed to "Mallards comprised the highest percentage of ducks killed (19%)."

Page 258, para. 6

Brown pelicans have not been observed at Shell Keys National Wildlife Refuge in several years.

Page 295, Figure 39

The areas of Rangia harvest should be revised to include Four League Bay, Atchafalaya Bay, West Cote Blanche Bay, Vermilion Bay, and Sabine Lake.

Page 370, para. 2

It was noted that oil and water contaminated with acid are "...disposed of ashore" following removal from the well site during production. The typical sites and methods of disposal should be listed in this section.

Page 384, Table 46

The sources of information utilized for completing the "Known Hazard" category of this table should be listed.

Page 387 and 388

We agree that when the "push" method is used and the pipeline burial trench is backfilled immediately, the disturbed area experiences significant recovery within one or two growing seasons. However,

when a permanent "floatation" canal is excavated, destruction and severe alteration of valuable wetlands is also virtually permanent. Adverse effects to these wetlands include such items as direct habitat loss through excavation and spoil disposal, accelerated erosion due to increased land-water interface, modification of surface drainage, and reduced esthetic quality. The statement should be revised to include these considerations in this and all other pertinent sections.

VOLUME II

Page 3, para. 4

With regard to open or "floatation" pipeline canals constructed in wetland areas we do not agree that the physical dimensions are much smaller than those of petroleum industry access channels. In the case of large diameter lines the width of the necessary canal is often 50-60 feet, with spoil occupying a similar width along the canal.

Page 6, para. 5

Reference previous comments on pipeline burial canals.

Page 25, para. 2

It is noted here that a "...diver survey conducted during one operation offshore Louisiana revealed that the drill cuttings could be detected over a circle 100 feet in diameter." This survey must have been conducted during the early stages of drilling, since it was previously noted in the draft statement that about 700 tons of drill cuttings were deposited overboard during an average drilling operation.

Page 25, para. 1

Estuarine areas are not restricted to the marshes of eastern Louisiana along the perimeter of the Gulf of Mexico but are found all along the entire Louisiana coast.

Page 169, para. 2

Although proper nearshore surface current data are not available for the study area, we question the reliability of predicting oil spill movement on wind data alone. Strong surface currents may carry oil spills into productive estuarine areas even though wind data would not indicate such a possibility.

Thank you for the opportunity to provide these review comments on DES 74-49.

Jerry L. Sleyman

d. Bureau of Mines

The Bureau of Mines offered several substantive comments, each of which is answered below.

Disposition:

Vol. 1

p.71--The discussion of the effects of unstable bottom sediments on offshore structures has been expanded and includes consideration of their effects on oil well casing.

p.392-The legend for this figure has been corrected.

p.395-The section dealing with oil spills greater than 50 bbls. in size has been revised and this particular prediction has been deleted.

p.396-We feel it is not necessary to expand this discussion to cover present drilling practices in the Santa Barbara area. This brief discussion is presented only as an example of a blowout. It is not an indication of conditions that exist in the Gulf of Mexico, nor a basis for making predictions about blowouts in the Gulf.

United States Department of the Interior

BUREAU OF MINES
WASHINGTON, D.C. 20240

June 12, 1974

Memorandum

To: Division of Marine Minerals
Bureau of Land Management

Through: Assistant Secretary--Energy and Minerals

J. Wells JUN 14 1974

From: Director, Bureau of Mines

Subject: Review of Environmental Statement, proposed 1974 Outer Continental Shelf Oil and Gas General Lease Sale, Offshore Louisiana, OCS Sale No. 36

Pursuant to your request, we have reveiwed the proposed statement within the context of our expertise and we were very much impressed with the thoroughness evidenced in the preparation of the draft. There are a number of areas, however, which may need some expansion and these are discussed below:

Vol. No. 1, p. 71 - 4a Unstable Bottom Sediments. Add discussion of shear effects on oilwell casing similar to the extensive coverage given to foundations of bottom-supported structures such as production platforms.

Vol. No. 1, p. 392 - Re Figure 50, Legend appears reversed--"Number of Spills" and "Amount of Oil Spilled".

Vol. No. 1, p. 395 - Re paragraph 3, delete prediction that the maximum size of any one spill will not exceed 3,000 barrels. Such a statement is unsupportable.

Vol. No. 1, p. 396 - Re Santa Barbara spill, suggest some expansion here; the sedimentary conditions in the vicinity of and in the Santa Barbara Channel dictate setting casing to greater depths than had been the practice in the late 1960's.

Thomas V Falkie

Director

e. Geological Survey

This agency submitted comments covering a wide range of subjects. Each comment is addressed below.

Dispositon:

As suggested in the first paragraph of the first page of the USGS memorandum, this information has been included in the text.

In response to the GS comments in the last paragraph of page 1 and first paragraph on page 2, the discussion of the proposed lease sale schedule was expanded. The environmental impact statement on the accelerated leasing will analyze the President's directive, therefore such a discussion in this statement is unnecessary. In respect to the first comment in paragraph 2 of page 2, one of the goals of the Department is the orderly development of OCS resources. Orderly development covers not only proper conservation methods, but also development which is consistant with the Nation's energy requirements and the industry's capabilities. The comments on fair market value in paragraph 2 of page 2 are best addressed in the environmental impact statement on accelerated leasing. The discussion of the deregulation of the well-head price of natural gas is being updated in light of new information.

Detailed Comments:

p. 4, para. 2--The text has been corrected.

p. 37-41--The text has been revised in this section in accord with the information supplied in the comments.

p. 42, Statements No. 2&5--These statements have been revised.

p. 44--This information has been added. (See Attachment D).

p. 55--This inconsistency has been corrected.

p. 58 and Figure 4 p. 59--We have inserted a new figure and revised the text.

p. 57, 2nd para.--Explanation of these terms has been added to improve clarity.

p. 58, 2nd para.--This information has been included.

p. 62--Figure 5 has been revised.

p. 65--A new Figure 6 has been included.

p. 68, middle para.--This revision has been made.

p. 68 1st para, last line--(Vol. 2, p. 69)--This correction has been made.

p. 71--We do not feel that this deletion would improve the clarity of this section.

p. 71--This paragraph has been added to the text.

p. 143--(Vol. 2)--The text has been corrected.

p. 146--(Vol. 2)--This table has been revised.

Attachment E--(Vol. 2.)--This Geologic Time Chart has been revised.

p. 272--Apparently this comment refers to Vol. 1, p. 362 of the DES. The suggested correction has been made.

p. 336, 2nd para. (both comments)--The text has been rearranged and revised in accord with this comment.

p. 340, 2nd para.--This text has been corrected.

p. 341, last para.--The text has been corrected.

p.345, 1st sentence.--The text has been corrected.

p.357, 2nd para.--The entire section on deep water completions has been rewritten.

p.364--This information has been added to the text.

p.365, 5th sentence.--This correction has been made.

Section A.3.b.--This section has been revised to more accurately describe this facet of offshore operations although Attachment 1 to this letter has not been substituted.

p.371--We find no inconsistency here. Some test production may be barged to the nearest field station but it is still believed that all regular productions from this sale will be transported ashore by pipeline.

pp. 382-383--USGS text has been substituted here with revised quantities of drill cuttings and commercial mud components.

p.415, 1st para.--This correction has been made.

p. 422--The table has been revised based on current total production figures and most recent accident statistics.

p. 640, last para.--Apparently this comment refers to p.340 of the DES. The suggested change has been made.

Volume 2.

p.68, 4th para.--This change has been made.

p.169--The text has been amended.

United States Department of the Interior

GEOLOGICAL SURVEY
WASHINGTON, D.C. 20244

OFFICE OF THE DIRECTOR

JUL 17 1974

DES 74-49

Memorandum

To: Director, Bureau of Land Management

Through: Assistant Secretary--Energy and Minerals

JUL 22 1974

From: Director, Geological Survey

Subject: Review of draft environmental statement concerning a Proposed Oil and Gas General Lease Sale Offshore Louisiana

We have reviewed the subject draft environmental statement as requested in a memorandum of May 8.

The discussion of seismic exploration for oil and gas (p. 338) might mention the possibility of direct recognition of natural gas on the cross sections, a possibility that may aid in reducing environmental impacts of offshore drilling by improving the ratio of productive wells to dry holes. The present discussion seems to suggest only that the seismic data indicate "the location, size and shape of geologic structures favorable to oil and gas accumulation" (p. 338), whereas it has recently been reported that gas accumulations may be directly interpreted from seismic records in some cases beneath the OCS by means of "bright spot" (Carl H. Savit, "Bright spot in the energy picture," Ocean Industry, Feb. 1974, p. 60-65; also reported in Oil and Gas Journal recently). Reference has been made to detection of near-surface gas pockets from high-resolution geophysical data (v. 2, p. 170), but it is doubtful that this is intended to refer to producible natural gas.

With regard to the proposed lease-sale schedule, it is stated that "a revised schedule will be issued" reflecting the President's directive of January 1974 that OCS leasing be accelerated (p. 15, paragraph 2). The proposed schedule shown in Attachment B appears to be in doubt in view of that directive, and it might be advisable to add a qualifying statement on the schedule noting that it is under revision.

In view of the directive to lease 10 million acres of the OCS in 1975 (an area more than seven times as large as the present lease sale, it seems essential to discuss the alternative of an accelerated lease-sale schedule. The alternatives now discussed include various forms of deceleration, such as the deletion of tracts (v. 2, p. 196-199), the substitution of tracts having less productive potential (v. 2, p. 200), delay of the sale (v. 2, p. 242), and even withdrawal of the sale (v. 2, p. 201), but no form of accelerated lease-sale scheduling seems to have been given serious consideration. In view of the energy shortage, it seems essential to evaluate that alternative and to estimate the relative environmental impacts and feasibility of meeting energy deficits by accelerated production of OCS gas and oil, or by accelerated production of coal, nuclear power, oil shale, or other means.

In the present discussion of the Proposed Five-Year Schedule (p. 13-15) the impression is given that leasing is being retarded in order to achieve three objectives of the Department, yet none of the stated objectives suggest that priority is being given to meeting the national requirement for energy. The stated Departmental objective of "receipt of fair market value" (p. 13, lines 4-5; p. 14, paragraph 2) has been mentioned several times as an important determinant of the proposed lease-sale schedule but does not appear to have been critically analyzed. No evidence has been presented to show that the proposed schedule would have an overall beneficial effect on the environment and/or on the economy by comparison with alternative acclerated schedules.

Deregulation of the wellhead price of natural gas has been discussed briefly on page 208 (v. 2), but the discussion is inconclusive, consisting mainly of an unevaluated argument in favor of deregulation. Since some well-informed economists have argued that the major long-term contributory factor in causing the energy crisis has been the Government regulation of natural gas price at the wellhead, it would be helpful to provide a more adequate discussion of related environmental impacts and of the relation of this policy to the three Departmental objectives referred to above.

Further, more detailed comments are attached.

Acting Director

Attachment

U. S. Geological Survey

Detailed Comments on

Proposed Oil and Gas General Lease Sale Offshore Louisiana

Page 4, second paragraph: The sixth line should read "2014 offshore platforms."

Page 37, Recommendation No. 3, Information Exchange: With respect to "Action Taken" a "Safety Alert" system has been initiated in the Gulf of Mexico area. With this sytem operators are advised of accidents occuring during OCS drilling and producing operations to inform the industry immediately of its own mistakes and malfunctions so that improvements can be made where applicable. Geological information pertaining to sea bottom conditions may also be disseminated. It is anticipated that an information dissemination system will be designed during the next fiscal year to provide industry with the results of the failure-reporting and corrective-action systems, accident investigations, inspection, and other elements of the lease management program.

Page 38, Recommendation No. 5, Standards and Specifications: With respect to "Action Taken," a cooperative committee on offshore safety and anti-pollution standards has been formed in conjunction with the API. This committee's function is to establish standards and specifications for safety and anti-pollution equipment. The first project undertaken by the committee was a recommended practice for design, installation and operation of subsurface safety valve systems and specifications for subsurface safety valves. Final copies of these standards have been published as API Documents 14-A and 14-B. In connection with this, a facility for the testing of subsurface safety valves is under construction in San Antonio, Texas, and will be operated by the Southwest Research Institute.

Additional projects undertaken by the committee include: recommended practice for the design, installation, and operation of offshore platform basic surface safety systems; specification for surface safety valves and actuators; and recommended practices for platform basic surface safety systems which have been made available for review and comment. The final copies of the listed standards will be published later this year.

A committee is being formed to conduct quality assurance inspections of subsurface safety valve manufacturers. The manufacturers must comply

with the quality assurance program as set forth in the specifications for subsurface safety valves in order to be licensed to sell the products. A priority list of safety equipment items has been established by the Offshore Safety and Anti-Pollution Committee whereby three task groups will continuously be active in setting up standards and/or recommended practices.

Page 39, Recommendation No. 9, Training: With respect to "Action Taken," a committee has been formed in conjunction with the API on offshore safety and anti-pollution training and motivation. This committee is outlining the training needed for personnel working offshore, setting up training programs, and establishing a time framework for accomplishing this. The three task groups established within the realm of the committee include: new employee orientation, drilling, API RP T-I, an Orientation Program for Personnel Going Offshore for the First Time, which has been published. The other task groups are also preparing documents.

The Geological Survey is establishing a more formalized training program for their own personnel. A training course in OCS orders and regulations was presented to GS personnel in April 1974.

Page 40, Recommendation No. 10, Motivation Program: With respect to "Action Taken," the committee established by the API and the GS is developing a motivation program. A Motivation Program Brochure has been published.

Page 41, Recommendation No. 15, Safety and Advisory Committees: With respect to "Action Taken," the industry has established a committee on OCS Safety in the Gulf of Mexico area. The area offices have designated personnel to form systems analysis review committees to meet on a regular basis. These committees have had their initial meetings and will continue meeting monthly to review prior accidents and accident reports and to discuss implementation of safety programs. The Director of the Geological Survey has formed a review committee on safety of OCS petroleum operations. This committee is composed of experts not regularly employed by industry or the Government and is sponsored by the Marine Board of the National Academy of Engineering. A number of meetings have been held by the committee. The review committee approved a subcommittee to review API documents relative to API-USGS committee projects. The committee also makes recommendations relative to petroleum operations.

Page 42, Statement No. 2: The inspection staff has been increased and the number of inspections, both scheduled and unannounced, has been increased.

Page 42, Statement No. 5, second sentence: In the meantime, Conservation Managers have initiated formalized training in inspection procedures.

Page 44: Add after the first sentence, "The Work Group of the GS in May 1974 issued 'Supplement No. 1 to the Report of the Work Group on OCS Safety and Pollution Control, May 1973.' The report is appended to Vol. 2 of this statement as Attachment E.

"This report considers the recommendations of the Oklahoma University study which were directed to the Geological Survey and as a result offers revision to previous recommendation nos. 4, 9, and 13, and adds four additional recommendations. The Director of the Geological Survey has accepted these recommendations and implementation has commenced."

Page 55: On figure 2 the reference is to the "Mississippi cone," but the map labels it "Mississippi fan."

Page 58 and figure 4, page 59: Only the Pleistocene wedge and the rather large vertical exaggeration are indicated and a lay reader might be left with the impression that the Pleistocene is all there is. Some of the terms on this illustration, e.g., neritic and bathyal, probably should be defined for the benefit of the lay reader.

Page 57, second paragraph: Explanation of the terms "regression" and "transgression" has been lost in the revision of the original text but should be included.

Page 58, second paragraph: Mention should be made that faunal "tops" sometimes occur within regressive sands.

Page 62: Figure 5 deals with a different theory of salt-dome formation than the one used in the text. It does not fit the text, particularly where the illustration refers to salt flowage "when temperature rises above the critical point." This concept is nowhere mentioned in the text.

Page 65: Figure 6 does not actually give much useful information about the Louisiana OCS. The figure 6 previously furnished by the Geological Survey (outlines of Gulf Coast salt basin and areal distribution of major groups of salt diapirs) is much more applicable to the Louisiana OCS.

Page 68, middle paragraph: We suggest revision of the fifth line to read, ". . . extent of this overlap is indicated by the areas of 'active deposition' on Figure 7 . . ."

Page 68, first paragraph, last line: "305 bbl./day" should be "305,000 bbl./day."

Page 71: The first sentence of the middle paragraph should be deleted. The statement is not complete, since other factors, such as geologic structures, are involved.

Page 71: At the end of the surface sediments section, we suggest the following be added: "The actively growing modern delta illustrates the constructional phase of the delta cycle. Other areas of offshore Louisiana illustrate the destructional phase which sets in when a river shifts its course and deposition ceases at the site of its former delta. North of the modern delta, the Chandeleur Sound-Breton Sound area represents the partially drowned eastern edge of the abandoned St. Bernard sub-delta (Figure 8). During the estimated 1,700 years since its abandonment, compaction of originally water-saturated delta-front sediments has resulted in the subsidence of the delta surface and its submergence beneath waters averaging six to 10 feet in depth. A thin cover of post-St. Bernard marine sediments now floors the sounds. (These marine sediments represent a modern, on-going transgressive cycle which is overlapping deposits of the previous St. Bernard regressive cycle.) Bottom sediments in the sounds range from sands and silty sands in open water to silty clays and clayey coquinas in protected localities. Wave and current action has sorted out sands from the submerged delta deposits and concentrated them at the approximate edge of the old sub-delta, building up the Chandeleur Islands-Breton Island chain of long, narrow sand bars and sand islands, and the sand "blanket" shown on Figure 9. The same processes have been active west of the modern delta, where older sub-deltas are now partially submerged (see Figure 8) and thinly covered by sands and sand-silt-clays."

Page 143, second line from the bottom: This sould read "6265 holes," instead of "11,383 holes."

Page 146: No year is specified in the title for Table 7. If these data are for January through December 1972, they do not agree with the data listed for that period in the impact statement for Sale No. 34.

Attachment E, Geologic Time Chart: The duration of the Pleistocene Epoch was one million years, not two million, and the epoch began one million years ago, not two million.

Page 272: We suggest that lines 2-4 be changed to read " . . . 7,000 bbl. of seawater plus commercial mud components are used to make up . . ."

Page 336, second paragraph: The third sentence, beginning "A typical high resolution data acquisition . . ." should be moved to page 339 and inserted at the end of the first complete paragraph. It would then follow the sentence ending in ". . . such as unstable bottom sediment conditions and fault zones." Figure 11 should be moved to follow the reference to the high resolution geophysical data.

Page 336, second paragraph: The fourth sentence should not be included in this paragraph since it pertains to "high resolution" not "CDP" seismic. This sentence more correctly belongs at the end of the second paragraph, page 339.

Page 340, second paragraph: The last sentence should read, "Section V" instead of "Section IV."

Page 341, last paragraph: In the first sentence, the mileage figure should be "25,000" instead of "18,450."

Page 345, first sentence: The deepest water depth for floating drilling in the Gulf of Mexico for the first six months of 1974 was 558 feet.

Page 357, paragraph 2: The second sentence should read, "Some systems allow non-divers . . ."

Page 364: Whole mud is treated many times and used as "packer fluid" in the well and not dumped overboard.

Page 365, fifth sentence: "MAGNABAR" should be spelled "MAGCOBAR."

Section A.3.b: Chapter III contains many errors, many of which are derived from using improper hole sizes in Table 43. There is also some misinformation on the use of drilling muds. We therefore recommend that pages 360-365 (to the beginning of Section A.3.c) be modified according to Attachment No. 1.

Page 371: The statement, "it is highly unlikely that any form of transportation other than pipeline will be used to move the produced gas and oil to the mainland," is not consistent with the statement (p. 406) that "it is anticipated that only a relatively small amount, if any, of oil will be barged."

Pages 382-383: Drill cutting and commercial mud discharges listed here are not representative. We suggest that the last paragraph on page 382 and the first paragraph on page 383 be amended as follows: "The Geological

Survey has estimated that between 700 and 900 wells would be required to develop the proposed acreage. At this time it would be premature to narrow the range of possible wells or predict the number of wells drilled to around 10,000 feet and those drilled to deeper or lesser depths. The drilling of 900-10,000-foot wells would yield approximately 630,000 tons of drill cuttings and up to 72,000 tons of commercial mud components."

Page 415, paragraph 1: Line 6 should read, "about 266 bbl./yr" instead of "about 42 bbl./yr."

Page 422: Table 50 should be modified to conform to Attachment No. 2.

Page 640, last paragraph: The first sentence should read: ". . . over the Louisiana OCS and slope (from the three-mile line out to the 600-meter water depth controu) have been collected."

Volume 2

Page 68, paragraph 4: The first sentence should read "1700 barrels of cuttings" and "2445 barrels of cuttings."

Page 169: The first sentence under item 5, "Geophysical Information," infers that we already have knowledge of the near-surface geologic structure under the proposed lease tracts. It would be more accurate to change the first two sentences to read: "The Geological Survey is aware of the effects of the near-surface geologic environment on drilling, fixed-structural emplacements, pipelines, etc. This knowledge is fundamental to a sound lease management program for the OCS."

b. Drilling Programs

As with exploratory drilling, the casing program and mud program for each well must be approved by the Geological Survey before a drilling permit is issued.

The following information was furnished by the Geological Survey and petroleum industry and describes the mud and casing program and cuttings generated by a representative offshore well. This well is assumed to be:

1) a development well (not exploratory)
2) drilled from a multi-well slot platform using a standard platform mounted rig
3) a "normal" well, i.e., one in which no special drilling problems or mud problems are experienced which would cause an abnormal volume of cuttings or usage of mud (special cases are discussed later)
4) drilled to a total depth of 10,000 feet. (Most wells resulting from this sale are anticipated to have a total depth of 8,000-10,000 feet.)

The representative 10,000-foot offshore well generates approximately ~~1,674~~ 1687 bbl. of cuttings weighing about ~~655~~ 682 tons. To drill this well approximately 7,000 bbl. of seawater ~~drilling mud containing 237~~ plus approximately 230 tons of mud components are used. The drill cuttings are separated

from the mud by screens and discharged overboard and the mud is saved and transported for reuse at another well site.

Average drilling time is 10 to 14 days. The casing program for this well consists of four strings:

1) the structural casing, about 30 inches in diameter. It is set to a minimum depth of 100 feet to provide stability in unconsolidated sediments
2) the 16-inch conductor pipe, set at 900 feet
3) the 10 3/4 inch surface casing, set at 3,500 feet
4) the 7-inch production string, set at 10,000 feet.

Drill Cuttings

Table 30 shows the volume of cuttings generated by the representative 10,000-foot well and the types of drilling muds that are used to drill the well.

As the drilling fluid-drill cuttings mixture is circulated to the surface, drill cuttings are separated from the drilling fluid by shale shakers, desilters, and desanders and discharged overboard.

Table 30. VOLUME OF DRILL CUTTINGS GENERATED AND DRILLING MUDS USED IN REPRESENTATIVE 10,000-FOOT OFFSHORE WELL

Interval (Feet)	Hole Size (Inches)	Volume of Cuttings (Barrels)	Approxi. Weight of Cuttings (Pounds)	Drilling Mud Type	Mud System Volume (Barrels)
0-900	24	~~514~~ 503	~~453,000~~ 407,000	seawater & natural mud	as required
900-3500	15	~~645~~ 569	~~440,000~~ 460,000	gelled sea-water	700
3500-10,000	9 7/8	615	497,000	ferrochrome lignosulfonate	950
Total		~~1674~~ 1687	~~1,390,000~~ 1,364,000		

Drilling Mud

There are two types of mud systems used in most OCS drilling operations. The most common is a water base mud where the liquid phase is water. The other is a ferrochrome lignosulfonate seawater mud. Both systems require the addition of weight material to produce a desired density. The most widely used weight material is barium sulfate ($BaSO_4$) obtained from barite, a mineral mined from natural deposits throughout the world. The mineral's high specific gravity (4.5), low water solubility (0.0004 g/100 ml.) and low toxicity make it ideal for marine drilling applications.

Many mud additives are used in OCS drilling operations to overcome negative conditions. The following table (Table 31) lists the most common additives and their primary function.

Table 31

MUD ADDITIVES

Function	Name	Amount (lbs./bbl.)
Alkalinity & pH control		
	1. Sodium hydroxide NaOH	0.1-0.3
	2. Sodium bicarbonate $NaHCO_3$	0.1-1.5
	3. Calcium chloride $CaCl_2$	0.1-3.0
	4. Calcium hydroxide $Ca(OH)_2$	0.5-8.0
Bacteriocides		
	1. Paraformaldehyde $(CH_2O)_x$	0.5-1.0
	2. Sodium chloride NaCl	5.0-10.0
	3. Sodium chromate Na_2CrO_4	0.1-4.0
Calcium Removers		
	1. Sodium bicarbonate $NaHCO_3$	0.1-1.5
	2. Sodium carbonate Na_2CO_3	0.5-2.0
	3. Sodium hydroxide NaOH	0.1-3.0
	4. Organic phosphate	0.1-0.5
Corrosion Inhibitors		
	1. Calcium hydroxide $Ca(OH)_2$	0.5-8.0
	2. Sodium chromate Na_2CrO_4	0.1-4.0
	3. Film forming amine	2.0
Defoamers		
	1. Aluminum stearate $/CH_3(CH_2)_{16}COO/_3Al$	1.0-10.0
	2. Alkyl aryl sulfonate	0.2-0.3
	3. Silicones	0.1-3.0
Emulsifiers		
	1. Calcium lignosulfonate	1.0-4.0
	2. Oxyethylated alkyl phenol	0.5-3.0
	3. Ferrochrome lignosulfonate	0.1-2.0
	4. Quebracho	0.2-5.0
Filtrate Reducers		
	1. Bentonite	5.0-10.0
	2. Sodium carboxynethlyl	0.1-1.5
	3. Sodium polyacrylate	1.0-3.0
	4. Starch	2.0-8.0

Table 31 (cont'd)

Function		Name	Amount (lbs./bbl.)
Flocculants	1.	Acrylamide polymeric hydrolite	.005- .01
	2.	Bentonite	1.0 -5.0
	3.	Lignosulfonate	1.0 -5.0
Foaming Agents			
	1.	Alkyl polyoxyethylene	8.0-16.0
Lost Circulation			
	1.	Cottenseed hulls	3.0-25.0
	2.	Cane fibers	2.0- 6.0
	3.	Asbestos	2.0- 6.0
	4.	Cellophane	5.0-10.0
	5.	Mica	2.0-10.0
Lubricants			
	1.	Oxidized asphalt	3.0-6.0
	2.	Carbon powder	1.0-2.0
Shale Control Inhibitors			
	1.	Oxidized asphalt	3.0-6.0
	2.	Calcium hydroxide	0.5-8.0
	3.	Sodium silicate	0.1-3.0
	4.	Calcium lignosulfonates	0.1-3.0
Surface Active Agents			
	1.	Oxyethylated alkyl phenol	0.5-3.0
	2.	Alkyl aryl sulfonate	0.2-0.3
Thinners & Dispersants			
	1.	Sodium tetraphosphate $Na_6P_4O_{13}$	0.1-0.2
	2.	Calcium lignosulfonate	1.0-4.0
	3.	Sodium chromate Na_2CrO_4	0.5-3.0
	4.	Quebracho	1.0-10.0
Viscosifiers			
	1.	Bentonite	1.0-5.0
	2.	Asbestos	2.0-6.0
	3.	Sodium carboxymethly cellulose	0.1-1.5

Table 32

GELLED SEAWATER MUD - TYPICAL COMPOSITION

Mud Component Used	Weight, lb.
Attapulgite Clay	56,300
Caustic (Sodium hydroxide)	5,500
Organic Polymer	3,700
Ferrochrome Lignosulfonate (Iron-2.6%, Chromium-3.0%, Sulfur-5.5%)	3,300
Pregelatinized Starch	500
Seawater	As required
Total Mud Components	69,300

Table 33

LIGNOSULFONATE MUD - TYPICAL COMPOSITION (Modification of mud described in Table 11)

Mud Component Used	Weight, lb.
Barium Sulfate (weighting agent)	319,000
Caustic (Sodium hydroxide)	22,500
Ferrochrome Lignosulfonate (Fe-2.6%, Cr-3.0%, S-5.5%)	29,600
Organic Polymer	4,100
Bentonite Clay in freshwater, or Attapulgite Clay in seawater	17,100
Proprietary Defoamer	325
Water	As required
Total Mud Components	392,625
Total Mud Components, less barium sulfate	72,625

72,625
69,300
325

the mud in the tanks is saved for use in drilling the next well. After the final well is drilled, all mud is generally barged ashore for recovery of chemical components or storage. Occasionally, when transport to shore storage facilities is not feasible, the unweighted components (whole mud less barite) are discharged overboard. The high cost of barite and other chemical additives makes their recovery economically desirable, however, and tends to keep overboard disposal at a minimum.

Special Cases

Occasionally, abnormal formation pressures, exceptionally tight formations, or other problems require the use of oil-based or highly treated drilling muds. Drill cuttings are then separated and cleared of entrained oil before being discharged overboard, and the drilling muds are retained and shipped to shore and stored in tanks for future use.

c. Production Operations

(1) Downhole Safety Devices

Wells usually are produced through tubing placed inside the final or production string of casing. During tubing installation, the blowout preventers remain in use to ensure control of the well. A system of in-tubing safety valves, plus other casing and tubing valves at the surface or seafloor, is installed

Table 50. PREDICTED POLLUTION FROM DEVELOPMENT AND OPERATIONS OF OIL AND GAS LEASES
OCS SALE #.36

Pollution Source	Pollutant	Duration	No. Incidents		Volumes		Units
			Low	High	Low	High	
Well Drilling	Drill Cuttings	Exploratory - 0-4th year Development 3-7th year	700 (wells)	900	~~770,000~~ 494,000	~~955,000~~ 630,000	tons
Well Drilling	Mud Chemicals	Same as above	700 (wells)	900	~~30,000~~ 5000	~~300,000~~ 72,000	tons
Total drill cuttings and mud chemicals discharged into sea					~~800,000~~ 495,000	~~1,255,000~~ 702,000	tons
Produced Formation Water	Brine/Oil	3rd yr - life			603,000 1/		bbl/day
Pipeline Leaks	Oil	3rd yr - life	0	3/yr	0	3,000	bbl/yr
Blowouts (Drilling)	Oil	0 - 7th yr	0	1	0	2/	
Platform Fires & Explosions	Oil	3rd yr - life	0	1/yr	0	1,370	bbl/ incident
Hurricane Damage	Oil	3rd yr - life	~~1/yr~~ 0	3/yr	~~1~~ 0	200	bbl/yr
Equipment Failure/ Human Error	Oil	3rd yr - life	2/yr	5/yr	13	27	bbl/yr
Ship Collision	Oil	Life	0	1/yr	0	.42	bbl/yr
Minor Spill ~~(1-50 bbl)~~ (<50 bbl)	Oil	Life	100/yr	150/yr	112	266	bbl/yr
Maximum amount oil which could be spilled into sea						4,905 3/	

1/ Total for all current Louisiana OCS operations - approximately 305,000 bbl/day transported to shore.

2/ Too many factors involved to make meaningful prediction. No "annual" volumes concerned.

3/ Does not include oil associated with formation water; represents peak of production, not developmental or declining years.

ATTACHMENT NO. 2

f. Atomic Energy Commission

This agency's comments concerned the lack of discussion of nuclear stimulation of gas formations as an alternative energy source.

Disposition

A discussion of this means of producing natural gas has been added in section IX.B.2.

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

JUN 25 1974

Mr. Frank A. Edwards
Assistant Director, Minerals
Management
Bureau of Land Management
Department of the Interior
Washington, D. C. 20240

Dear Mr. Edwards:

This is in response to your letter of May 8, 1974, inviting the U. S. Atomic Energy Commission (AEC) to review and comment on the Draft Environmental Statement concerning a proposed Outer Continental Shelf Oil and Gas General Lease Sale (OCS #36) consisting of 295 tracts of submerged lands offshore Louisiana.

We have reviewed the Nuclear Power Section and find this Section to be responsive to our comments on previous drafts; however, we note that no mention has been made regarding the nuclear stimulation for gas production. We feel that this method can contribute significantly to the total energy supply within the 1985 time constraint mentioned and a discussion of this alternative should be included. In the April 1973 report entitled, "Natural Gas Technology Task Force for the Technical Advisory Committee of the Natural Gas Survey by the Federal Power Commission," the estimated total yearly gas production by 1985 from the Uinta, Piceance, and Green River Basin fields using nuclear stimulation from 110 to 200 wells is 812 to 1,939 billion cubic feet (Table II-2, page II-7).

The AEC Directorate of Regulation has determined that this sale will not conflict with any projects under their jurisdiction and therefore have no comment.

Thank you for the opportunity to review this Draft Statement.

Sincerely,

W. H. Pennington
Assessments and Coordination
Officer
Division of Biomedical and
Environmental Research

cc: Council on Environmental Quality (5)

g. Department of Transportation, U.S. Coast Guard

This agency offered no substantive comments.

Disposition

None required.

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS:
U.S. COAST GUARD (G-WS/73)
400 SEVENTH STREET SW.
WASHINGTON, D.C. 20590
PHONE: (202) 426 2262

JUN 19 1974

Mr. Frank A. Edwards
Assistant Director, Minerals Management
Bureau of Land Management
Department of the Interior
Washington, D. C. 20240

Dear Mr. Edwards:

This is in response to your letter of 8 May 1974 addressed to Deputy Chief, Office of Marine Environment and Systems, U. S. Coast Guard concerning the draft environmental impact statement for the Outer Continental Shelf oil and gas general lease sale, offshore Louisiana.

The Department of Transportation has reviewed the material submitted. We have no comments to offer nor do we have any objection to the lease sale.

The opportunity to review this application is appreciated.

Sincerely,

R. I. PRICE
Rear Admiral, U. S. Coast Guard
Chief, Office of Marine Environment
and Systems

h. Department of Defense

This agency had no substantive comments.

Disposition

None required.

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

HEALTH AND
ENVIRONMENT

26 JUN 1974

Mr. Frank A. Edwards
Assistant Director
Minerals Management
U.S. Department of the Interior
Bureau of Land Management
Washington, D.C. 20240

Dear Mr. Edwards:

In response to your letter dated May 8, 1974, this office has reviewed your draft environmental impact statement on the subject of the proposed 1974 Outer Continental Shelf Oil and Gas General Lease Sale, Offshore Louisiana. We have no substantive comments to offer.

Sincerely,

H. R. Smith

H. R. Smith
Acting Deputy Asst Secretary of Defense
(Environmental Quality)

i. Department of Commerce

The Department of Commerce made numerous comments, dealing with the description of the environment and the identification of various possible impacts of the OCS oil and gas operations on fishery resources.

Disposition

Volume 1

p. 118, 1st para.--This comment has been noted in the text.

p. 188, 3rd para.--This information has been incorporated in the text.

p. 190, 2nd para.--This typographical error has been corrected.

p. 191--Sapidus has been underlined.

p. 227, 4th para.--Reference was included under (Taylor, et al., 1973).

p. 202, 1st para.--The proximity values for the potentially commercially important fishery of royal red shrimp, have been appropriately upgraded to .6 in the matrix analysis (see Section IV.K. and Attachment H). The manner in which matrix values are assigned to specially designated fisheries is currently under review by the Bureau of Land Management.

p. 293, Figure 39--The figure has been changed to reflect the wider range of this species.

pp. 402, 404, 408, 409--These bibliographic references have been added.

Volume 2

p. 52, 2nd para.--The tracts listed in this comment have been given proximity values (1.) for structures in accord with the proximity scale we have established for our matrix (section IV.K.) Although the intensity of commercial fishing activity on these banks is not known, they do represent typical habitats for commercially important species. The proximity value for structures in relation to sport fishing have also been changed.

p. 54, 3rd para.--Further consultation with the U.S. Coast Guard has confirmed that underwater stubs must be marked by a buoy in 200 feet of water or less, and that the buoy be lighted if in 85 feet of water or less. However, if in depths between 85 feet and 200 feet the stub is covered by a "bonnet" which would prevent snagging of fishing nets, it may not be required to be marked. The text has been changed to reflect this information.

The information regarding the difference between abandoned wells and temporary "stubs" appears in section III.A.2.b. It is impossible to determine an average time a stub may exist before it is abandoned or a well is completed since this may vary with every producing field.

p. 58, para. 1--We agree with the Department of Commerce's assumption that the burial of existing pipelines would be extremely difficult, but it would also be extremely expensive and may involve legal problems concerning the application of new regulations to existing pipelines. We are aware that due to improved technology and other factors, Gulf Coast fisheries may expand their operations into deeper waters in the future. BLM, before issuing the permit for right-of-way for any common-carrier pipeline, conducts an environmental assessment of the proposed route to determine whether an environmental impact statement should be written. The feasibility of marking the pipeline route in some manner in order to avoid conflict with other uses of the OCS will be considered at this point. In addition, a Memorandum of Understanding between BLM and GS for pipeline management is currently being finalized. This agreement will facilitate coordination of efforts by the two agencies to manage OCS pipeline systems in a manner which will minimize environmental damage, assure safe operations, and streamline regulations and procedures.

pp. 156-159--Based on currently available information we do not feel it necessary to attach a stipulation as described in this comment to leases resulting from this proposed sale. The stipulation discussed in section V.B. takes into consideration

commercial fishery operations and resources and will serve to minimize any adverse impact. During this fiscal year, BLM will study submerged banks in the Gulf of Mexico that may serve as habitat for important commercial fish species. Information acquired through this study and through studies discussed in section I.G. will be used in determining any additional steps which could be taken to protect commercial fisheries from adverse impacts from OCS oil and gas operations.

p. 158, 3rd para.--As we have stated in response to a similar comment in a previous statement, economic factors involved in developing an offshore oil and gas field and the stipulation in section V.B. concerning the placement of structures serve as effective mitigating measures against conflict with commercial fisheries. The considerable cost of offshore platforms dictates that as few as possible be used and their placement will be governed by the above mentioned stipulation and by the extent or nature of the oil or gas field they are developing.

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

July 2, 1974

Mr. Frank A. Edwards
Assistant Director
Minerals Management
Bureau of Land Management
Department of the Interior
Washington, D. C. 20240

Dear Mr. Edwards:

The draft environmental impact statement for the proposed "1974 Outer Continental Shelf Oil and Gas General Lease Sale, Offshore Louisiana," which accompanied your letter of May 8, 1974, has been received by the Department of Commerce for review and comment.

The statement has been reviewed and the following comments are offered for your consideration.

Volume I

Introduction to the Marshes

Page 118, paragraph 1. The discussion of marsh productivity would be enhanced by citing Teal and Teal (1969) and Gosselink et. al. (1973) for their recognition that tidal marshes are more productive than any form of agriculture.

An interesting point, which could be brought out is that much of the energy fixed by the marsh is not only utilized in Gulf food webs but also in important bay and estuarine food webs.

8. Estuaries and Embayments

Page 188, paragraph 3. It is stated that Rangia are eaten by the freshwater drum, Aplodinotus grunniens, and the black drum, Pogonias cromis. Darnell (1958) reported shells of young Rangia in the stomachs or intestines of the Atlantic stingray, Dasyatis sabina: three species of gars, Lepisosteus

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

sp.; blue catfish, Ictalurus furcatus; spot, Leiostomus xanthurus; Atlantic croaker, Micropogon undulatus; and less frequently in the stomachs of pinfish Lagodon rhomboides; southern flounder, Paralichtys lethostigma; grizzard shad, Dorosoma cepedianum; and the bay anchovy, Anchoa mitchilli. Shells of small clams were also found in the digestive tract of river shrimp, Marcrobrachium ohione; white shrimp, Penaeus setiferus; and blue crab, Callinectes sapidus.

Page 190, paragraph 2. Pink Shrimp, "P. durodarum" is a typographical error and should be changed to P. duorarum.

Page 191. The specific name for the blue crab, "sapidus," should be underlined - sapidus.

Description of Commercially Important Fisheries

Page 227, paragraph 4. The Bibliography lacks a reference to Taylor, 1973.

Secondary Producers - Consumers

Page 202, paragraph 1. It is mentioned that small quantities of royal red shrimp, Hymenopenaeus robustus, are found in waters from 175 to 300 fathoms deep. A report issued by the Bureau of Commercial Fisheries (Roe, 1969) states that royal red "shrimp on the Mississippi Delta grounds are distributed primarily between longitudes 87° 30' and 89° 30' West in water 275 to over 550 metres deep" (150 to 300 fathoms). Although royal red shrimp are less concentrated on grounds covered by this statement than in areas discussed in Roe's report, the area of present interest still has commercial fishery potential.

An inspection of the OCS leasing map and National Ocean Survey Chart 115A shows that the following tracts, proposed for this lease sale, fall within potentially commercial royal red shrimp grounds:

MOBILE SOUTH NO. 2 NH-16-10

Tract	Block
268	N655E55
269	N655E56
270	N655E57
279	N656E57
286	N662E67
287	N662E68
288	N662E69
289	N663E67
290	N663E68
291	N663E69
292	N664E67
293	N664E68
294	N664E69
295	N666E70

The proximity values of structures in the matrix analysis of these tracts should be upgraded to reflect possible adverse effect on the royal red shrimp commercial fishery.

Shellfish (excluding shrimp)

Page 293, figure 39. Although on page 188 the distribution of Rangia clams is given as all along the Gulf Coast, figure 39 indicates that Rangia is found only in Lake Pontchartrain. Perret, et. al. (1971) have reported larged populations of Rangia in Lake Maurepas, Lake Salvador, Vermillion Bay, Sabine Lake West Cote Blanche Bay, Atchafalaya Bay and Four League Bay.

Oil Spills Resulting from Platform Fires

Page 402, paragraph 1. Bibliographic reference to Berry, 1972, is lacking.

Pollution Caused by Hurricanes

Page 404, paragraph 1. Bibliographic reference to Blumberg's report of 1964 is lacking.

Tanker and Tank Barge Accidents and Operations

Page 408, paragraph 4. Bibliographic reference to Charter, et.al., 1973, is lacking.

Page 409, paragraphs 1 and 2. Bibliographic references to Porricelli and Keith, in press and Porricelli, 1969, are lacking.

Volume II

1. Removal of Sea Floor from Use

Page 52, paragraph 2. Table 3 is partly in error and the following corrected table should be substituted.

Table 3 Tracts with Significant Rises or Parts of Rises which Normally Serve as Snapper and/or Grouper Banks

Tract	Block	Depth of Rise (Fm)	Bottom Depth (Fm)
West Cameron Area			
16	114	3¼ - 4¼	5¼ - 6¼
19	147	3½	6 - 6 3/4
Ship Shoal Area - South Addition			
165	350	29 - 45 (Possible Coral Reef)	59
South Timbalier Area - South Addition			
176	317	41	70 - 80
Garden Banks NG-15-2 Area			
214	N636E98	69 - 61 (Shoal)	111 - 136
217	N637E103	Part of 30½ - 36	100 - 110
226	N638E103	30½ - 36	110 - 112
227 SE/4	N638E106	35 lump within 57 Fm shoal	104 - 108
228	N638E107	Continuation of 57 shoal	121 - 175
235	N638E118	66	100 - 180
241 S/2	N639E103	36	110 - 117
242 S/2	N639E106	37 Shoal to 57	108 - 129

New Orleans - South No. 1 NG-15-3 Area

250	N638E128	44 within 52-56	107-152

The proximity values of structures used in the matrix analysis of these tracts should be further upgraded to reflect possible adverse effect on commercial and sport fisheries.

2. Creation of Obstructions on the Sea Floor that Cause Damage to Trawling Nets

Page 54, paragraph 3. The statement, concerning the Coast Guard regulations requiring buoy marking of stubs located in water 80 feet or less deep, does not agree with a similar statement made in regard to the Draft Environmental Impact Statement, OCS Sale No. 34, Offshore Texas in which the depth for compulsory buoy marking is given as 200 feet or less.

From replies to our comments conerning the Draft Environmental Impact Statement, OCS Sale No. 34, Offshore Texas it is our understanding that abandoned well heads are terminated beneath the sea floor, while temporary well heads to be used in future production are left protruding above the sea floor. This information should be included in this section of the final statement. A statement should be included concerning the expected average time a well head is to remain protruding above the sea floor before either being put into production or terminated beneath the sea floor.

Page 58, paragraph 1. Although at the present, 90 percent of the shrimp catch is caught landward of the 20 fathom depth contour, there are commercial quantities of large brown shrimp present out to the 40 fathom deep contour. Royal red shrimp have been located in commercial quantities off the Mississippi Delta at depths from 175 to 300 fathoms (Roe, 1969). These shrimp represent a relatively unharvested resource which with increasing deep water fishing capabilities and increasing demand are expected to be more utilized in the future. If this potential fishery is developed would it be feasible or possible to bury unburied pipelines? Assuming that burying unburied pipelines would be an extremely difficult task, it is suggested that unburied pipelines be marked by lighted buoys and/or lighted ranges on nearby platforms.

Structures

Pages 156 - 159. This section can be strengthened by stipulating that on known snapper and grouper banks drilling and structure construction take place between November 1 and June 1, the period sport fishing is at a minimum and, more importantly, when red snapper spawning takes place. If drilling is to be conducted under snapper and grouper banks during the summer or early fall, we strongly recommend directional drilling from adjacent locations. Permanent platforms should not be constructed on the tops or slopes of any small abruptly rising snapper-grouper bank if such structures reduce reef accessibility to fishermen.

Page 158, paragraph 3. In an effort to further mitigate the problem of creating new obstructions to commercial fishing activities, a discussion should be made on the possibility and feasibility of locating protruding well heads and emergent platforms near known fishing obstructions within a leased area. An aid in making preliminary site selections is a draft edition of Bottom Fishing Obstructions: Texas/Louisiana Gulf, by G.L. Graham, published by the Marine Advisory Service; Fisheries, Texas A and M University.

Thank you for giving us an opportunity to provide these comments which we hope will be of assistance to you. We would appreciate receiving a copy of the final statement.

Sincerely,

Sidney R Galler

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Attachment - Literature Cited

Literature Cited

Darnell, R.M. 1958. Food Habits of fishes and larger invertebrates of Lake Pontchartrain, Louisiana, an estuarine community Publ. Inst. Mar. Sci. U. of Texas. 5:353-416

Gosselink, J.G., E. P. Odum, and R.N. Pope. 1973. The value of the tidal marsh. Pre-publication draft. Urb. and Reg. Dev. Center, Univ. Fla., Gainesville, Fla.

Perrett, W.S., W.R. Latapie, J.R. Pollard, W.R. Mock, G. B. Adkins, W.J. Gaidry and C. J. White. 1971. Cooperative Gulf of Mexico estuarine inventory and study, Louisiana. Phase IV, Biology. Sect. I. Fishes and invertebrates collected in trawl and seine samples in Louisiana estuaries. La. Wildl. Fish. Comm. pp. 29-175.

Roe, R.B. 1969. Distribution of royal red shrimp, Hymenopenaeus robustus, on three potential commercial grounds of the southeastern United States. Fish. Indus. Res. Vol. 5(4):161-174.

Teal, J. and M. Teal. 1969. Life and death of a salt marsh. Little, Brown and Co. 278 p.

j. Environmental Protection Agency

EPA submitted numerous comments directed toward the technological capabilities of developing deep water tracts and tracts with unstable bottom sediments, the possible pollution of OCS waters by platform discharges and the advisability of offering for sale all those tracts we have listed as having high hazard potential. Each comment is addressed below.

Disposition

1. The discussion of subsea completions has been expanded in section III.A.3.a. and the problem of controlling a blowout from a subsea completion has been specifically addressed.

2. BLM, too, is concerned about the as yet unknown effects of drilling mud discharge into the ocean. Through different means, BLM has attempted, and will continue to attempt, to acquire information on the toxicity of mud components, the amount dumped into the ocean, and procedures that may mitigate any adverse effect this may have on the environment. These efforts include literature search, public hearings, informal meetings with industry, and inquiries directed to other agencies. The text of the FES reflects the latest information we have acquired.

BLM feels that more information is needed in order that steps can be taken to effectively mitigate possible adverse impacts

from the discharge of drilling muds. Section I.G. of this statement discusses environmental baseline studies in various areas of the OCS which will include monitoring of oil and gas operations to determine their effect on the environment.

At an informal presentation by industry representatives concerning drilling muds on July 10, 1974, it was reported that EPA's regional office in Dallas, Texas, was investigating the feasibility of developing and using a toxicity test for whole mud. This would be a useful step toward developing possible mitigatory restrictions on operations which are generally governed by OCS Operating Orders issued and enforced by USGS.

3. The text has been amended at this point to reflect the uncertainties which exist concerning the toxcity of this material and the differences of opinion concerning the switching from the use of one additive to another. We are aware of no further studies which resolve this conflict of opinion over the relative toxicities of the two substances, nor can we provide estimates as to industry's use of ferrochrome lignosulfonate vs. chrome lignosulfonate.

4. The discussion on disposal of formation waters in section III.A.3.c. has been expanded to consider in further detail the feasibility of reinjection.

5. Geological Survey has established these standards with the intention of keeping the allowable levels of pollutants as low as practically possible. In the process of revision of OCS orders, in this case Order No. 8, EPA and other concerned agencies have the opportunity to comment and offer their expertise to help improve these regulations. We encourage the timely and practical revision of such standards and the participation of all concerned agencies in the revision process.

6. To our knowledge, there is no specific research effort being directed toward improving the quality of effluent from oil-water separators other than the industry's continuing effort to upgrade quality and reduce costs in a competitive market.

Information concerning the effects of chronic oil pollution is gathered through literature search using facilities of the Bureau of Land Management, Department of Interior Library, official correspondence, hearing testimony and hearing exhibits. Information is gathered and evaluated by BLM staff employees prior to inclusion in the impact statement. In addition, contract studies in certain areas of the OCS (Section I.G.) will include the monitoring of oil and gas activities which should also lead to the acquisition of data on this subject.

7. USGS advises that estimates of volumes spilled are based on the best data available after the spill. Some of the sources are:

1. Last recorded platform or well producing rate.
2. Latest tank gauges.
3. Known volumes of pipeline fill.
4. Operators estimates
5. Other observers' estimates (USGS inspectors, Coast Guard, Clean Gulf supervisors, EPA observers, etc.)

A consensus or best estimate, is determined and entered as spill data. At this writing the USGS has no plans to change this procedure.

8. BLM shares the concern expressed by EPA regarding the offering of the tracts we have indicated as having high hazard potential. As an indication of this concern, the FES has been substantially revised with the inclusion of more detailed discussions on deep water technology and unstable bottoms. The intent of this revision is to more clearly indicate to the decision maker and the public, the capabilities of industry to develop these particular tracts and to more accurately define the environmental risk involved in their development. The discussion of the alternative of deleting "high hazard" tracts has been expanded.

The tract-by-tract matrix analysis (sections IV.K-M. and Attachment H) distinguishes those tracts considered to have high hazard

potential. The discussion on the Relative Environmental Impact Factor (IV.K) calls for the careful scrutinizing of these tracts by the decision-maker. The Recapitulation of the Matrices (IV.L) further outlines the kinds of impacts that can be expected from each tract. Section IV.M. ranks all tracts according to the degree of potential environmental risk they present, and again calls for special attention to be given those posing a high environmental risk.

It is our opinion that the revised discussions on deep water technology and unstable bottom sediments, the tract-by-tract matrix analysis, and the revised discussion of the alternatives of deleting tracts rated as having high hazard potential constitute a thorough and objective consideration of the environmental impacts of the proposed sale and of various alternatives to the proposed sale.

It should be pointed out, however, that eight tracts which were removed from offering in OCS sale #33 due to the presence of unstable bottom conditions are being offered in this sale. These eight tracts are among those indicated as having high hazard potential and should be given special consideration and analysis before they are leased.

9. The final statement has been revised with the inclusion of a detailed discussion on deep water technology and current capabilities (section III. A. 3.). Based on this information, it is our

opinion that the "deep water tracts" proposed for leasing are not all beyond current operating capabilities as shown by operations and experiments in several areas of the world, although operations in the Gulf of Mexico have not yet extended to these depths.

10. It is expected that, at most, one new pipeline will be brought ashore as a result of this sale. Most production will be brought ashore through existing pipelines. Since an extensive infrastructure already exists, we do not consider the establishment of "corridors" appropriate in this area. However, BLM, in granting the permits for common carrier lines coming ashore, will attempt to insure that any new pipeline is constructed in the least environmentally hazardous area. Prior to the issuance of any such permit, BLM will conduct an environmental assessment of the proposed route and if necessary prepare an environmental impact statement.

ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

27 JUN 1974

OFFICE OF THE
ADMINISTRATOR

Mr. Curtis J. Berklund, Director
Bureau of Land Management
U.S. Department of the Interior
Washington, D.C. 20240

Dear Mr. Berklund:

The Environmental Protection Agency has reviewed the draft environmental statement for the Proposed 1974 Outer Continental Shelf Oil and Gas General Lease Sale Offshore Louisiana (#36) and our detailed comments are enclosed. In general, we feel the Bureau has adequately examined potential environmental impacts associated with the proposed action. There are, however, several issues which we feel require further analysis.

Thirty eight of the 295 tracts to be offered are classified as being in the high hazard category. Spills from these tracts could pose significant danger to the environment. From a technological standpoint we are especially concerned about the offering of the twelve tracts (186 through 194, 198, 204, and 205) located in unstable sediment areas and the ten tracts (286 through 295) that are located close to shore and beyond the 200 meter isobath. We have serious reservations concerning the technology required for developing all of the deepwater oil prone tracts since drilling technology at such depths has not yet been fully tested. The development of tracts in unstable bottom zones poses different but equally difficult problems since slumping sediments can cause both platform and pipeline failure. The sixteen remaining high hazard tracts have been so classified because of their proximity to productive marshes, estuaries and refuge management areas. We have reservations concerning the offering of these high risk tracts, and feel that the final statement should give more consideration to deletion of these tracts in discussion of sale modification alternatives. The remainder of our comments are addressed to the problems of heavy metal accumulations in the marine environment and platform discharges.

In accordance with the EPA rating system for environmental statements, we are classifying this statement as ER-2. This means we have environmental reservations regarding the offering of the high hazard tracts and we are concerned about the danger of dumping potentially toxic heavy metals into the marine environment.

We appreciate the opportunity to have reviewed this statement and hope that our comments will be of assistance in the preparation of the final statement.

Sincerely,

Sheldon Meyers

Sheldon Meyers, Director
Office of Federal Activities

Enclosure

EPA Comments on Draft Environmental
Statement on Proposed 1974 Outer Continental
Shelf Oil and Gas General Lease Sale, Offshore Louisiana #36

1. (Volume I, Page 357) The discussion of subsea completions does not indicate how or if it will be possible to reenter a well should it be necessary in the case of an uncontrolled flow. If a relief well is the only method of reestablishing control, then pollution potential from these completions will be far greater than from conventional platforms since it won't be possible to burn escaping oil. The final statement should discuss all additional hazards associated with subsea completions and pollution potential .

2. (Volume I, Page 360). The development of this offshore area could result in the drilling of 700-900 wells and the production of several hundred tons of drill cuttings. During the course of drilling it will be necessary to use large quantities of drilling mud. Both cuttings and mud will be discharged overboard which may induce adverse environmental impacts to the aquatic ecosystem in the immediate area of the platform. Of special concern is the disposal of drilling muds containing various toxic and potentially toxic substances. Most commercial drilling mud contains high concentrations of heavy metals such as chromium and barium. Since the exact effects of these metals are not known at the present, we are concerned about their release into the marine environment. Until the synergistic relationships of the heavy metals to each other and the marine ecosystem have been delineated, they should be considered harmful. The barium content of commercial drilling mud is usually quite high, but much of it is recovered by centrifugation before discharge. The amount eventually released could be a significant addition to the marine environment at the platform locations and the amount released is being compounded as more and more wells are drilled. In order to minimize the amount of heavy metals being discharged into the coastal marine environment, BLM should consider requiring that spent drilling muds be transported back to shore and either properly treated or reclaimed. This alternative should be discussed in the final statement.

3. (Volume I, Page 365). The draft statement indicates that the toxic effects of ferrochrome lignosulfonate, a component of drilling mud, is associated with the production of toxic iron in an acid environment and not a direct result of the presence of chromium. They further point out that the industry is switching to drilling mud containing chrome lignosulfonate, a compound which has shown no adverse effects in bioassay studies having concentrations greater than 10,000 ppm. We suggest that the final statement discuss the effect this change will have

on the future use of drilling mud at the proposed lease sites. If possible, estimates of industry's use of drilling mud containing ferrochrome lignosulfonate vs chrome lignosulfonate should be included in the final statement.

4. (Volume I, Page 366). The release of formation water to the marine environment should also be considered as a potential source of pollution. These formation waters usually contain emulsified oil, inorganic salt concentrations several times higher than sea water, higher than ambient water temperatures, lower dissolved oxygen concentrations, and in some cases, heavy metals such as cadmium and barium. The present criteria allow for an upper limit of 50 ppm oil to be discharged into the Gulf following treatment. The volume of residual oil being released during the life of a well or lease tract, could be a significant amount of oil entering the marine environment. The presence of residual oil as well as the other adverse factors associated with formation water release make it imperative that proper disposal methods be employed. Presently the bulk of the formation water produced is either treated on the platform and released or transported to shore, treated and released. Reinjection is utilized as a secondary recovery technique to increase oil production from a formation. The reinjection of formation water is an alternative which could alleviate some of the adverse impacts otherwise associated with its release to the marine environment. Because of this, we believe reinjection of the formation water as a disposal method should be discussed as an alternative.

5. (Volume I, Page 369). One other source of pollutants generated at offshore platforms is sanitary wastes. Treatment is carried out using septic tanks plus 15 minutes of chlorination. Allowable levels of BOD and TSS in the discharge effluent are 50 ppm and 150 ppm respectively. These values exceed those permitted at onshore sewage treatment facilities. We suggest that the final statement consider other alternative means of disposal for wastewater effluent.

6. (Volume I, Page 386). The discussion of discharged formation water mentions the problems associated with oil and water separators and their failure to remove that portion of the oil which is dissolved in the water. The final statement should identify any research efforts related to improving the performance of oil and water separators, and should describe what methods are being employed in the gathering of information on the effects of chronic low level oil pollution.

7. (Volume I, Page 402). In the discussion of oil spills resulting from platform fires, a great disparity is noted between USGS estimates of oil spilled into the sea, and EPA estimates of spillage based on remote sensing surveys. The measurement of oil spilled will be important not only in regard to operations resulting from this sale, but in future East Coast oil development as well. The final statement should describe the method of evaluating oil spillage amounts and should indicate if this method will be adhered to.

8. (Volume 2, Page 121). The draft statement classifies 38 of the 295 tracts proposed for leasing as being in a high hazard category. Spills from these tracts could be damaging to the environment. Twelve of the tracts (186 through 194, 198, 204, and 205) are oil prone and located on unstable sediments. Other close to shore, high risk tracts include sixteen which are located near valuable estuarine and wildlife refuge areas (tracts 129 through 131, 168, 180, 182 through 185, 195 through 197, 200 through 202 and 212). Tracts 286 through 295 are considered highly hazardous because they are oil prone and in deep water, in addition to being very close to shore. We are concerned with the proposed offering of these tracts for leasing because of the possible damage to the environment which could result from a spill during or after their development. Most of these tracts are near shore, oil prone, and in many cases, located in close proximity to very productive marshes, estuaries, and refuge marine environment areas. A spill reaching shore could be extremely damaging to the local aquatic and terrestrial environment.

   Specifically, we have reservations concerning the required technology for the development of deepwater tracts. The draft statement (Volume II, Page 198) points out that the technology necessary for drilling deepwater tracts has not been fully tested. We are also concerned with the tracts located on unstable bottom sediments. Volume 1, page 75 mentions that problems ranging from pipeline ruptures to the total loss of platforms have been associated with unstable delta sediments. The seriousness of any spill resulting from an offshore accident from these tracts would be compounded by their relative closeness to the shore and various fragile ecosystems.

   Because of these factors we believe the final statement should consider deleting these 38 tracts from the proposed offshore sale. This possibility was briefly mentioned as an alternative in Volume 2, Page 199, and should be expanded. Since the potential risks to the environment are considerable, this alternative should be thoroughly and objectively considered.

9. (Volume II, Page 122). The draft statement notes that the deepwater tracts are in "some" cases deeper than current operating depths in the Gulf of Mexico. It is stated elsewhere in the statement (Volume I, Page 354) that at the present time the deepest platform in the Gulf of Mexico is in 373 feet of water. All of the deep, high hazard tracts are in at least 200 meters of water and in several cases approach depths almost five times that of current operating capabilities in the Gulf. The final statement should be modified to reflect the fact that all of these tracts are beyond current operating capabilities. In this connection we feel all deepwater oil prone tracts should be considered as highly hazardous, due to the lack of proven technology in this area.

10. (Volume II, Page 164). EPA has consistently expressed concern regarding the identification and utilization of pipeline corridors to minimize coastal and marshland perturbations. We feel that the Department should consider the application of a special stipulation to all leases issuing from this sale that would require the utilization of pipeline corridors where feasible.

2. State Agencies

a. Louisiana

The Commission on Intergovernmental Relations and the Department of Conservation responded to our call for review of the DES.

Disposition

None required.

STATE OF LOUISIANA
COMMISSION ON INTERGOVERNMENTAL RELATIONS

EDWIN EDWARDS
GOVERNOR
SENATOR MICHAEL H. O'KEEFE
CHAIRMAN
LEON TARVER
EXECUTIVE DIRECTOR

P. O. BOX 44455
BATON ROUGE, LOUISIANA 70804
389-5664

May 23, 1974

Mr. Frank A. Edwards
Assistant Director
U. S. Department of Interior
Bureau of Land Management
Washington, D. C. 20240

Dear Mr. Edwards:

Volume I and II of the Draft Environmental Statement concerning the Outer Continental Shelf Oil and Gas General Lease Sale has been reviewed by our office to determine which State agencies would be interested in the content of the statements.

It has been determined that the Louisiana Wildlife and Fisheries Commission has received copies of the statements and will provide a technical review. However, the Governor's Council on Environmental Quality advised us that they had not received copies of the statements. Copies are being made available to that office for their technical review. Comments from both activities will be mailed directly to your office, with a copy to the Louisiana Commission on Intergovernmental Relations.

This should fulfill the requirements of the State Clearinghouse as outlined in Part II of OMB A-95.

If we can be of any further assistance, please feel free to contact this office.

Sincerely yours,

William J. Gallegos
State Clearinghouse Manager

WJG:se

Enclosure

HOUSE COMMITTEE
J. RICHARD BREAUX
ROBERT FREEMAN
T. W. HUMPHRIES
ALPHONSE JACKSON, JR
RICHARD THOMPSON

GOVERNOR'S COMMITTEE
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JOHN A. COX
GORDON FLORY
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EDWARD STAGG

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EDGAR G. MOUTON
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GOVERNOR
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LEON TARVER
EXECUTIVE DIRECTOR

STATE OF LOUISIANA

COMMISSION ON INTERGOVERNMENTAL RELATIONS

May 20, 1974

P O BOX 44455
BATON ROUGE, LOUISIANA 70804
389-5664

Mr. Clint Pray
Chairman Executive Director
Governor's Committee on Environmental Quality
3101 37th Street
Metarie, Louisiana 70001

Attention: Mr. Bill Deville

Dear Mr. Deville:

Volume I and II of the Draft Environmental Statement on the proposed 1974 Outer Continental Shell Oil and Gas General Lease Sale are enclosed for your review and comment as per our conversation of May 20.

Please be advised that comments on these documents are requested no later than June 20 and are to be forwarded directly to U. S. Department of Interior with a copy to the Louisiana Commission on Intergovernmental Relations.

If you have any questions pertaining to this project, please feel free to contact this office.

Sincerely yours,

Regis Allison
Federal Programs Analyst

RA:amk

Enclosures

CC: U. S. Department of Interior

HOUSE COMMITTEE
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State of Louisiana

R. T. SUTTON
COMMISSIONER

DEPARTMENT OF CONSERVATION
BATON ROUGE 70804

P. O. BOX 44275

March 7, 1974

Mr. Donald Truesdell
U. S. Department of the Interior
Bureau of Land Management
Division of Marine Minerals (732)
Washington, D. C. 20240

Dear Mr. Truesdell:

In regard to your proposed 1974 Outer Continental Shelf oil and gas general lease sale offshore Louisiana (OCS Sale #36), I again appreciate the opportunity to present my views with respect to the environmental statement you are now preparing.

My views, and those of my staff, have not changed from past statements in this regard, and we can only repeat past expressions that our state, and the nation as a whole, is in immediate need of offshore lease sales in order that our diminishing supply of crude oil and gas can be mitigated by additional drilling.

In 1972 Louisiana, including federal offshore property, contributed 24% of the total crude produced in the nation and 37% of the nation's gas. During the first eleven months of 1973 these proportions had not changed; therefore, it is evident that the decline in production of other states is equivalent to that of Louisiana since our decline has been on a constant rate.

For the past three years, Louisiana's crude producing capability has been dropping at a rate of 12,750 barrels per day per month. Our gas deliverability has been declining for the past two years at a rate of approximately 34,000 Mcf per day per month.

It is still our firm opinion that the only solution of achieving an adequate and reliable supply of energy within the immediate future is the establishment of a vigorous program of exploration in the offshore area. Current events dictate that we must not rely on import of crude

oil from foreign powers, and other energy sources in this country cannot be expected to supplement such supplies in the near future.

We wholeheartedly endorse the proposed lease sales and will welcome an accelerated program of exploration.

Yours very truly,

R. T. Sutton
Commissioner

RTS:BJK:lwh

74

3. Public Hearing Testimony and Record

On June 5, 1974, the Department of the Interior held a public hearing in New Orleans, Louisiana for the purpose of receiving views, comments, and suggestions related to the Proposed 1974 Outer Continental Shelf (OCS) Oil and Gas General Lease Sale Offshore Texas.

James Broderick, an Administrative Law Judge, presided as Hearing Officer. The hearing panel consisted of King Mallory, Deputy Assistant Secretary, Energy and Minerals; Donald Truesdell, representing the Assistant Secretary for Land and Water Resources; and Al Sherk, representing the Assistant Secretary for Fish, Wildlife and Parks. Backing up the hearing panel was a technical panel of representatives from the Washington Office of the Bureau of Land Management and the New Orleans Office of the Geological Survey.

Forty-seven persons submitted oral and/or written testimony for the hearing record. They represented Federal, State, and local government units, the petroleum and related industries, utility and service companies, universities, and professional organizations (See Attachment Q).

All comments received were in favor of the proposed lease sale in general; however, several individuals expressed their opposition to royalty bidding and one other individual commented on pipeline corridors. Both will be summarized at the end of this section.

The position set forth in the bulk of the testimony was that the environment would not be harmed by OCS oil and gas development due to present technology, regulations, and safety records. Many individuals noted the positive impact the proposed lease sale would have on the Louisiana economy. In addition, several individuals expressed their support of the President's accelerated OCS leasing program. Where inaccuracies in the data presented in the draft statement were pointed out, changes have been made. Where omissions of information were cited, they were added to the statement. In all cases, specific and applicable information has been incorporated into the statement.

The hearing record, including a 255-page transcript of the oral testimony and all written testimony submitted, is available for inspection at the Office of the Manager, Gulf of Mexico OCS Office, Bureau of Land Management, Suite 3200, The Plaza Tower, 1001 Howard Avenue, New Orleans, Louisiana 70113; and at the Office of Public Affairs, Bureau of Land Management (130), Washington, D. C. 20240.

Numerous detailed comments were received. In those instances where the hearing comments were those of Federal or State governmental agencies which were officially requested to provide comments, they are contained in full in the immediately preceding section of this statement. The following categories of issues have been derived from the Public Hearing Record, and essentially summarize the record.

ENERGY CRISIS AND ENERGY ALTERNATIVES

1. Numerous comments indicated the need to develop offshore oil and gas reserves because of the increasing demand for those energy sources and a decreasing supply of them. Supply companies told of their increasing curtailments in deliveries due to the increasing shortages.

2. Several comments mentioned the Middle East embargo on oil exports, and the extra load this placed on the Nation's supply, usage, and energy planning.

3. Because of the immediate need for increased energy, many individuals stated there was no viable alternative to the proposed OCS sale. In addition, however, they expressed the need for increased research and development of alternative energy sources that could be used in the future.

ENVIRONMENTAL IMPACT OF DEVELOPMENT OF THE OFFSHORE OIL AND GAS RESOURCES

1. The majority of the comments reflected a concern for the environment, but, at the same time, many scientists and commercial fishermen stated that the development of oil and gas resources could proceed without undue risk to the environment and without conflict with other Gulf activities, such as commercial and sport fishing.

2. Individuals stated that development of the deepwater tracts included in this proposed sale could proceed without undue environmental risk. Technology is presently available for this development. It will be more expensive and involve some logistical problems but, nevertheless, is quite feasible from the industry standpoint.

3. Although the environmental impact of chronic low-level oil spills has not been sufficiently assessed, studies have been and are currently being conducted by members of the scientific community on this problem. Thus far, there is no evidence of any adverse environmental effects.

LOCAL AND REGIONAL ECONOMIC IMPACT

1. Several testifiers stressed the dependence of Louisiana on the oil and gas industry--from resource recovery to petrochemical products. They commented on the positive economic impact the proposed lease sale would have on these industries.

2. The multiple use concept for the Gulf of Mexico resources was mentioned. Some said that offshore oil and gas operations enhanced the commercial and sport fishing industry.

Impacts on commercial fishing are discussed in Section IV.E. and sport fishing in Section IV.L.7.

DEPARTMENTAL RULES AND REGULATIONS

1. As already stated, many comments were received in support of the President's new energy message announcing an accelerated leasing program.

Additional Issues

1. One testifier expressed his concern about pipeline corridors. He addressed several problems including installation, pipeline accidents, sediment disruption, additional miles of pipeline, additional pipeline platforms, and nearshore impacts.

Appropriate sections of the statement have been revised to reflect the Department's position. Pipeline corridors will not be used in Louisiana due to the extensive pipeline system already in existence. However, they will be used in frontier areas wherever possible.

2. Several persons commented on royalty bidding, each giving their reasons for opposing this idea.

The Department recognizes the possibility that royalty bidding may encourage to delay development, reduced reserve recovery, and participation of bidders with less expertise and financial resources. However, this experiment has been designed to determine in an actual situation the effects of royalty bidding on production, revenue, participation, and rate of development. Provisions on compulsory unitization will mitigate problems of different royalty rates. There will be a fixed cash bonus in order to discourage entry of bidders with inadequate financial resources and expertise.

4. Other Public Comments

In addition to the Public Hearing Record, a few comments were received on the draft statement. All were in support of the proposed lease sale with the exception of one which is printed and answered on the following pages. These comments were taken into consideration in the preparation of the final statement.

All of the specific issues that were raised in these comments have also been contained in the official comments or the summary of the hearing record, both printed in this volume. Appropriate responses and/or revisions have been made in the environmental statement to properly reflect these comments.

CENTER FOR LAW AND SOCIAL POLICY

I. All of the alternatives mentioned in this comment have been given consideration in section IX.

II. 1) Beyond 200 meters water depth there are essentially two major technological problems concerned with producing wells, not encountered at lesser depths. These are:

A. Platform construction: As mentioned in the text (III.A.3.a.) platforms have been erected in 373 feet (115 meters) of water; platforms are being constructed for installation in 500 feet (150+ meters) of water in the North Sea; a design for a platform installation in 850 feet (260 meters) of water in the Santa Barbara Channel Unit in the Santa

Barbara Channel has been completed and ready to start construction; and a design for a 1020 foot (310 meters) platform for the Gulf of Mexico is underway. A one-third scale model of a tension leg platform is scheduled to be tested in 250 feet of water near Calatina Island in early 1975. Tension leg platforms are expected to be serviceable in a range of water depths from 200 to 2000 meters. We have no information on buoyant towers other than what is in the test. Once a platform is installed, the drilling and completion of wells are the same as in operations from a shallow water platform.

B. Subsea (seafloor) Completions: The dividing line between shallow and deep water for subsea completions might be designated as 1000 feet (300 meters), about the limit of diver capabilities today. Subsea completions are also discussed in the text (III.A.3.a.) and consist of two categories--"wet trees" and "dry trees". The "wet tree" is relatively insensitive to water depth but must be fabricated fron seawater resistant material and must be remotely operated. "Dry tree" systems are sensitive to water depth only in the wall thickness of the encapsulating structure required to withstand external pressure. Ordinary off-the-shelf well heads may be used and the

system can be serviced by non-diver personnel in a shirt-sleeve atmosphere. There are variations of both systems for both single and multiple well installations. Reliability and safety of these systems has been proven on 89 subsea completions since 1962.

2) Technology per se does not change with water depth; sophistication and cost increase at something greater than a straight-line ratio.

3) There are no technological differences. See 1) and 2).

4) See 1).

5) Characteristics and installation procedures for fixed platforms are given in the text (III.A.3.a.). Characteristics of tension-leg platform aresimilar to a fixed leg platform with some allowable sway due to wind and sea conditions. Its major advantage is expected to be cost. Installation is by towing to location, lowering anchor caissons to the seafloor and loading the anchors with ballast. Subsea production systems should have all the same operating characteristics as a platform located system. Installation will vary from system to system but essentially, beyond diver capabilities, consists of lowering matching, prefabricated units, modules, packages, etc. to the seafloor where they are

attached or connected either automatically or by remote operated manipulators. Once installed there should be no unusual operating problems.

6) The final choice of the type of production system to be used in any instance will be determined by considering all pertinent factors including but not limited to: safety, water depth, weather patterns, seafloor conditions, kind of production (oil or gas), proximity to existing wells, depth of wells, well head pressures and, of course, economics.

7) No.

8) No.

9) See 1).

10) See 1) and text (III.A.3.a). There should be no environmental effects other than those already discussed in the FES.

11) Same as 10).

12) See 1).

13) See 1).

General Maintenace and Workover

1) No additional problems are anticipated. Subsea completions would utilize through-the-flowline workover tools but this is a proven technique often used on platforms and onshore wells.

2) Maintenance and workover problems have little or no relation to water depth.

Deep Water Accidents

1) Types of major accidents that might occur in deep water are identical with those elsewhere onshore and offshore in the Gulf Coast area.

2) Available methods for limiting environmental impacts of an accident in a deep water tract are the same as employed elsewhere on the OCS.

3) Fabrication of a deep water platform is estimated to take about two years assuming all materials are readily available and there are no work stoppages.

4) Relief wells would in all probability be drilled by a dynamically postioned drill ship or semi-submersible. Once sufficient tracts have been leased, one could always be moved off its location to move in and drill the relief well.

5) The question is vague - what are "such" accidents? Section I.A.4. describes all measures available to combat accidents and disaster on the OCS. If the question is directed toward availability of deep water drilling rigs, there presently is only one on the OCS and another being modified. The number of deep water rigs available on the OCS will have a direct relationship with the number of deep water tracts leased.

6) See 4) above. Relief well drilling would have little relation to water depth other than the capabilities of the unit(s) available.

7) As mentioned earlier diver capability is currently about 1000 feet. Submersibles and diving bells are not used in accident situations.

8) The probability of a major spill is independent of water depth.

9) Oil production should range from 17-36° API and this material should rise, via gravity, through 68°F seawater at a rate of 5-50 cm per second. Water current should lengthen the time required The time would also be inversely proportional to water temperature due to viscosity effects.

10) The probability of oil on the surface of the sea reaching shore is entirely independent of water depth, unless such depth influences the surface currents. About the only recreation envisioned in the vicinity of a deep water tract would be sport fishing. The spilled oil would, no doubt, cause the fish to seek clean areas and cause the sportsman to have to look elsewhere. The spilled oil could foul boats and gear should anyone be inclined to enter the area of an oil slick.

11) These are discussed in the text.

Chronic Water Pollution

1) The amount of oil discharged as a result of deep water operations will depend on many factors. It is necessary to take into account the number of wells to be drilled, the number of wells to be completed, the incidents of human error, the occurrence of storms, the occurrence of various types of accidents, and the type of hydrocarbons produced in deep water (oil or gas). For a more detailed presentation, see section III.B. of the FES.

2) It can be assumed that operators will comply with the appropriate regulations governing the discharge of pollutants into the ocean or be subject to applicable penalties (see section V).

3) See section IV for a discussion of the environmental impacts of oil pollution on the marine environment.

4) See section V for a discussion of existing measures considered appropriate for the mitigation of possible adverse effects of OCS oil and gas operations including the discharge of effluents.

5) Drill cuttings and drilling mud composition, use, and disposal are treated in detail in section III.A. and their effects are discussed in various sections of the text. The alternative to any dumping that occurs would be to prohibit dumping.

Effect on the Biota

1) See section I.G. for a discussion of studies that are currently going on and those that are planned.

2) The commercial and sport fisheries of the central Gulf are extensively discussed in the FES and the impacts of this proposed sale on these fisheries are discussed in section IV.D. and on a tract-by-tract basis in the matrix analysis, sections IV.K-M and Attachment H. Most commercial fishing is conducted in shallower waters than what we are referring to as "deep water tracts". The exceptions have been noted (snapper/grouper banks and royal red shrimp areas).

3) The effects of turbidity, dumping of cuttings, hydrocarbon pollution, dredging and jetting on different types of biota have been discussed in section IV.A. and B. Deep water operations will produce much the same results where they take place.

4) Deep water production will affect the "photosynthetic process" in the same manner that shallow water operations affect it.

Recreational Uses

1) Deep water production, if far from shore, will have little if any effect on recreation. Deep water production, if near shore, will have much the same effect as production from any other tracts.

2) See answer to previous question.

Historical and Cultural Resources

1) It is unlikely that there are any archeological remains beyond 200 meters of water depth in the Gulf. There may be shipwrecks

beyond 200 meters, however. The locations of all shipwrecks beyond 200 meters that may be considered cultural resources are not known.

2) See section V.D. for measures taken to protect these resources.

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June 14, 1974

Mr. Curt Berklund
Director, Bureau of Land Management
U.S. Department of the Interior
Washington, D. C. 20240

Dear Mr. Berklund:

The Sierra Club, the Natural Resources Defense Council, and the Friends of the Earth have had an opportunity to review Draft Environmental Statement (DES 74-49), OCS Sale No. 36, for the proposed lease sale of oil and gas tracts on the Outer Continental Shelf (OCS) offshore Louisiana. In response to the Bureau of Land Management's notice in the Federal Register soliciting views on the draft environmental statement (39 Fed. Reg. 15192, May 1, 1974), we submit the following comments:

I. At the outset, we question the declared Government policy of expanded and accelerated OCS leasing which will have the effect of exploiting and depleting the OCS resource rapidly. We think that a considered and rational approach to development of the OCS requires, as a first step, that the extent of the OCS resource be accurately determined. Methods other than substantial reliance on private industry should be considered. Reasonable estimates can be achieved through Government exploratory drilling--an alternative discussed in DES 74-49 (Vol. 2, pp. 248-51a)--which we endorse. OCS development ought to be considered in the light of other available petroleum resources, including of course those on shore in the continental United States. In estimating the extent of these resources (including secondary and tertiary recovery), and indeed of all U.S. petroleum resources, account needs to be taken of the recent drastic increase in crude oil prices and the effect of that increase in estimating economically recoverable reserves. OCS development should be considered also in the light of other factors: the feasibility of alternative energy sources, and the possibilities of significant conservation to reduce the national energy demand. Only when all these steps have been taken will it be possible to assess properly the role that the OCS should play in the larger energy picture.

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II. We are also very concerned with the policy decision, reflected in the present draft environmental statement, to proceed rapidly with the development of deepwater regions. Approximately 25% of the tracts offered for sale are situated in water depths of 200 meters or beyond. In Sale No. 33 of tracts offshore Louisiana, the deepwater tract ratio was 10%; that sale was held only two and a half months ago, and the Bureau announced in the Final Environmental Statement (FES) that the move into deep water signalled the start of "a new era of OCS oil and gas development". (FES 74-6, OCS Sale No. 33, Vol. 1, p. 77). It was our conclusion at that time that the brief discussion of deepwater exploitation in the Final Environmental Statement was inadequate and did not indicate that technology was sufficiently advanced to ensure environmentally safe development of the deepwater regions. The Environmental Protection Agency had reservations along the same lines and submitted comments stating that it was "concerned about the technological aspects of the deepwater (beyond the 200 meter isobath) development tracts." (FES 74-6, OCS Sale No. 33, Vol. 3, p. 55). EPA noted that "The draft statement acknowledges the technical difficulties associated with deepwater production operations" and recommended that

> "deepwater tracts should be closely scrutinized for inclusion in this sale with special operational safety stipulations . . . [W]e feel that the matrix formulation should reflect the consideration of increased depth as a risk factor. This factor should always be addressed since any increase in depth could entail greater danger of environmental pollution during production activities." (FES 74-6, OCS Sale No. 33, Vol. 3, p. 58.)

The deepwater problem has not been addressed in significantly greater depth in the present draft environmental statement. The occasional references to deepwater exploitation contained in DES 74-49 consist mainly of assertions that the recognized problems of deepwater technology will be worked out by industry. There is an absence of analysis and of any independent evaluation by experts within the Interior Department or under contract to the Department. Moreover, there is a pressing need to consider the operating standards that ought to be applied in the deepwater environment.

Basic questions remain unanswered; we raise some of them in our more detailed comments which follow:

TECHNOLOGY

The discussion of deepwater technology in DES 74-49 (Vol. 1, pp. 354-358) provides only the barest outline of production methods. An assertion is made without analysis that "No technological limitation in platform installations in water depths to at least 1000-1200 feet (300-360 meters) are apparent at this time." (p. 354). Even if that assertion is true, DES 74-49 offers no indication as to how tracts up to 500 meters deep which are offered in the present sale are to be exploited safely. DES 74-49 contains a brief discussion of buoyant towers and subsea production systems. But it is noted that buoyant towers "[have] never been used on the U.S. OCS;" and "It is emphasized that subsea completion techniques are still in the development stage." (p. 355). In light of the sketchy knowledge outlined in the Draft Environmental Statement, we believe that the following questions need to be investigated and discussed:

1. What technological problems are encountered when production wells are drilled in water depths greater than 200 meters?

2. Does the technology for exploratory and production wells change as depths increase?

3. What are the technological differences, between production at 200 meters, 300 meters, 400 meters, 500 meters, and beyond?

4. What are the major types of production system that might be utilized for deepwater production? By way of example, potential production systems might include: fixed platforms, semi-submersible platforms, buoyant towers, tension-leg platforms and subsea production systems.

5. What would be the characteristics, installation procedures, and operating problems of each of the above systems?

6. What criteria should be utilized to decide between different types of production systems at different depths and in different areas?

7. Have fixed platforms been tested in depths beyond 200 meters? at what depths? Have fixed platforms been subjected to an independent technological evaluation? What environmental effects can be attributed to utilization of this method of production?

8. Have floating platforms been designed for deep water? tested? if tested, at what depths? Have floating platforms been subjected to independent technological evaluation? What environmental effects can be attributed to utilization of this method of production?

9. Have tension-leg systems been designed? tested? if tested, at what depths? Have tension-leg systems been subjected to independent technological evaluation? What environmental effects can be attributed to utilization of this method of production?

10. What designs have been developed for subsea production systems? What tests have been made? Have subsea systems been subjected to independent technological evaluation? What environmental effects can be attributed to utilization of this method of production?

11. What types of subsea completions have been designed and tested? At what depths and under what conditions? Have subsea completions been subjected to independent technological evaluation? What environmental effects can be attributed to utilization of this production method?

12. What designs have been developed for buoyant towers? What tests have been made? If tested, at what depths? Have buoyant towers been subjected to independent technological evaluation? What environmental effects can be attributed to utilization of this method of production?

13. What is the feasibility of utilizing diving bells, individual divers, and submersibles for installation of subsea completions and subsea production systems? At what depths and by what method have subsea completions and production systems been installed?

GENERAL MAINTENANCE AND WORKOVER

1. In general, are additional problems in general maintenance and workover encountered when production is at depths greater than 200 meters?

2. Discuss problems encountered at 200 meters, 300 meters, 400 meters, 500 meters, and beyond.

DEEPWATER ACCIDENTS

1. What are the general types of major accidents that might occur in deep water, e.g., oil spills from barges, pipelines, subsea completions, production systems, platform fires?

2. What are the available methods for limiting the environmental impact of an accident once it has occurred?

3. How long will it take to construct work platforms at depths ranging from 200-500 meters and up?

4. What are the prospects for drilling relief wells when needed to cope with major deepwater accidents?

5. How much equipment is presently available to deal with such accidents?

6. How long after an accident occurs would it take to construct a work platform and drill a relief well? Does this time period increase if the accident occurs at 200 meters? 300 meters? 400 meters? 500 meters, and beyond?

7. At what depths can individual divers, submersibles, and diving bells operate in accident-control operations?

8. What is the likelihood of a major oil spill occuring as a result of deepwater production? Does this probability increase as production depths increase?

9. At varying depths, how long after a major oil spill occurs would it take different types of oil to reach the surface? How is this time period affected by a variety of natural factors, including water currents, water temperature, geophysical structure?

10. What is the likelihood of oil from a deepwater spill reaching the shore? What is the likelihood of the oil affecting recreational uses?

11. What are the short-term and long-term effects of a major oil spill on the deepwater marine environment? How are waterborne biota and benthic organisms affected?

CHRONIC WATER POLLUTION

1. How much oil will be discharged as a result of daily deepwater operations?

2. Can discharges be limited so that full compliance with the Federal Water Pollution Control Act can be achieved?

3. What are the short-term and long-term effects of chronic pollution on the deepwater marine environment?

4. What standards should be promulgated and enforced with respect to effluent discharges in deepwater regions?

5. How should drill cuttings and drilling muds be discharged? If dumped into the deepwater regions, what will be the environmental effects? What alternatives are there to dumping?

EFFECT ON THE BIOTA

1. In what geographical areas have baseline studies on the deepwater environment been contemplated? commissioned? completed? If not presently completed, when will they be completed?

2. What will be the effect of deepwater production on commercial and sport fishing?

3. How will deepwater production affect spawning grounds? deepwater biota? benthic organisms?

4. How will deepwater production affect the photosynthetic process?

RECREATIONAL USES

1. Will deepwater production affect recreational uses of marine environment?

2. What is the likelihood that a major deepwater oil spill or platform fire will affect recreational use? Do deepwater spills have a different effect on recreational use than shallow water spills?

HISTORICAL AND CULTURAL RESOURCES

1. Are there historical and cultural resources

200 meters? If so, where are these resources located?

2. What steps are being taken to preserve these resources?

RECOMMENDATION

In our view, sufficient research and planning for the development of deepwater tracts have not yet been carried out. We have noted with great interest two alternatives to the sale proposed in DES 74-49: (a) delaying the sale until new technology is available to provide increased environmental protection and until studies are completed concerning the potential environmental impact of offshore minerals development (Vol. 2, p. 242); and (b) treating deepwater tracts which have been leased in previous sales as pilot projects and, accordingly, discontinuing the leasing of deepwater tracts "until industry deve-ops these presently leased deep tracts, and shows that operations can be conducted there in an environmental[ly] responsible manner." (FES 74-49, Vol. 2, p. 198). We believe these alternatives express rational policy approaches, and we urge the Bureau to adopt one or both of them in the interest of sound development of the Outer Continental Shelf.

Sincerely yours,

Leonard C. Meeker

Leonard C. Meeker

LCM:fg

ATTACHMENT A

OCS OPERATING ORDERS NOS. 1 THROUGH 12
GULF OF MEXICO

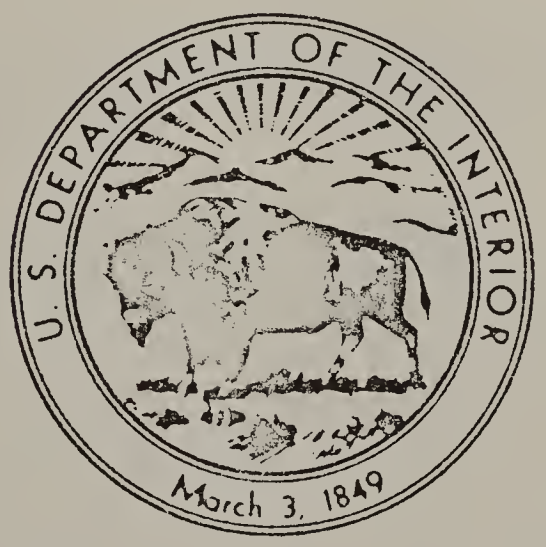
Notice to Lessees and Operators Of Federal

Oil, Gas, And Sulphur Leases

In The Outer Continental Shelf

Gulf Of Mexico Area

OCS Order Nos. 1 through 12—Gulf of Mexico



UNITED STATES
DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY
CONSERVATION DIVISION

Branch Of Oil and Gas Operations
Gulf Of Mexico Area

101

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

MARKING OF WELLS, PLATFORMS, AND FIXED STRUCTURES

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.37. Section 250.37 provides as follows:

> Well designations. The lessee shall mark promptly each drilling platform or structure in a conspicuous place, showing his name or the name of the operator, the serial number of the lease, the identification of the wells, and shall take all necessary means and precautions to preserve these markings.

The operator shall comply with the following requirements. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. Identification of Platforms, Fixed Structures. Platforms and structures, other than individual wellhead structures and small structures, shall be identified at two diagonal corners of the platform or structure by a sign with letters and figures not less than 12 inches in height with the following information: The name of lease operator, the name of the area, the block number of the area in which the platform or structure is located, and the platform or structure designation. The information shall be abbreviated as in the following example:

   "The Blank Oil Company operates 'C' platform in Block 37 of South Timbalier Area."

   The identifying sign on the platform would show:

   "BOC - S.T. - 37 - C."

2. Identification of Single Well Structures and Small Structures. Single well and small structures may be identified with one sign only, with letters and figures not less than 3 inches in

height. The information shall be abbreviated as in the following example:

> "The Blank Oil Company operates well No. 1 which is equipped with a protective structure, in Block 68 in the East Cameron Area."

The identifying sign on the protective structure would show:

> "BOC - E.C. - 68 - No. 1"

3. Identification of Wells. The OCS lease and well number shall be painted on, or a sign affixed to, each singly completed well. In multiple completed wells each completion shall be individually identified at the well head. All identifying signs shall be maintained in a legible condition.

Robert F. Evans
Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

DRILLING PROCEDURES OFF LOUISIANA AND TEXAS

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.34, 250.41 and 250.91. All exploratory wells drilled for oil and gas shall be drilled in accordance with the provisions of this Order. Initial development wells drilled for oil and gas shall be drilled in accordance with the provisions of this Order which shall continue in effect until field rules are issued. After field rules have been established by the supervisor, development wells shall be drilled in accordance with such rules; except that in fields containing more than five development wells, additional development wells commenced prior to October 1, 1969, may be excluded from provisions of this Order, as approved by the supervisor, to permit time for the establishment of field rules.

Where sufficient geologic and engineering information is obtained through exploratory drilling, operators may make application to the supervisor for the establishment of field rules, but the operator(s) shall make such application before more than five development wells have been drilled in the field. Operators may also make application for the establishment of field rules for existing fields containing more than five development wells on the date of this Order. Each Application to Drill (Form 9-331C) for exploratory wells and development wells not covered by field rules shall include all information required under 30 CFR 250.91 and the integrated casing, cementing, mud, and blowout prevention program for the well, and shall comply with the following requirements. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. Well Casing and Cementing. All wells shall be cased and cemented in accordance with the requirements of 30 CFR 250.41(a)(1). The Application to Drill (Form 9-331C) shall contain a statement that all zones which contain oil, gas, or fresh water shall be fully protected by casing and cement. For the purpose of this Order, the several casing strings in order of normal installation are drive or structural casing, conductor casing, surface casing, intermediate casing, and production casing. All depths refer to true vertical depth (TVD).

A. Drive or Structural Casing. This casing shall be set by drilling, driving, or jetting to a minimum depth of 100 feet below the Gulf floor or to such greater depth required to support unconsolidated deposits and to provide hole stability for initial drilling operations. If drilled in, the drilling fluid shall be a type that will not pollute the Gulf, and a quantity of cement sufficient to fill the annular space back to the Gulf floor must be used.

B. Conductor and Surface Casing - General Principles. Determination of proper casing setting depths shall be based upon all geologic factors including the presence or absence of hydrocarbons and water depths on a well-for-well basis. The setting depths of all casing strings shall be determined by taking into account formation fracture gradients and hydrostatic pressure to be contained within the well bore. The conductor and surface casing shall be new pipe or reconditioned pipe that has been tested and inspected to verify a new condition.

(1) Conductor Casing. This casing shall be set in accordance with the table below. A quantity of cement sufficient to fill the annular space back to the Gulf floor must be used. The cement may be washed out or displaced to a depth of 40 feet below the Gulf floor to facilitate casing removal upon well abandonment.

(2) Surface Casing. This casing shall be set at a depth in accordance with the table below and cemented in a manner necessary to protect all fresh water sands and provide well control until the next string of casing is set. This casing shall be cemented with a quantity sufficient to fill the calculated annular space to (a) at least 1,500 feet above the casing shoe, or (b) within 200 feet below the conductor casing. Whenever there are any indications of improper cementing, such as lost returns, cement channeling, or mechanical failure of equipment, a temperature or cement bond survey shall be run, either before or after remedial cementing, to aid in determining whether the casing is properly cemented. If the annular space is not adequately cemented by the primary operation, the operator shall either recement or squeeze cement the shoe after drilling out.

(3) Conductor and Surface Casing Setting Depths. These strings of casing shall be set at the depths specified in the following table subject to minor variation to permit the

casing to be set in a competent bed; provided, however, that the conductor casing shall be set before drilling into shallow formations known to contain oil or gas or, if unknown, upon encountering such formations. These casing strings shall be run and cemented prior to drilling below the specified setting depths. For those wells which may encounter abnormal pressure conditions, the district engineer may prescribe the exact setting depth within the ranges specified below.

Required Setting Depth Below Gulf Floor (TVD in feet)

Proposed Total Depth of Well or Depth of First Full String of Intermediate Casing (TVD in feet from Rorary Table)	*Surface Casing*		*Conductor Casing*	
	Minimum	*Maximum*	*Minimum*	*Maximum*
0 - 7,000	*1,500*	*2,500*	*300*	*800*
7,000 - 9,000	*1,750*	*3,000*	*400*	*800*
9,000 -11,000	*2,250*	*3,500*	*500*	*900*
11,000 -13,000	*3,000*	*4,000*	*600*	*900*
13,000 -Below	*3,500*	*4,500*	*700*	*1,000*

C. Intermediate Casing. This string of casing shall be set when required by anticipated abnormal pressure, mud weights, sediment and other well conditions. The intermediate casing shall be new pipe or reconditioned pipe that has been tested and inspected to verify a new condition. A quantity of cement sufficient to cover and isolate all hydrocarbon zones and to isolate abnormal pressure intervals from normal pressure intervals shall be used. If a liner is used as an intermediate string, the cement shall be tested by a fluid entry or pressure test to determine whether a seal between the liner top and next larger string has been achieved. The test shall be recorded on the driller's log. When such liner is used as production casing, it shall be extended to the surface and cemented to avoid surface casing being used as production casing.

D. Production Casing. This string of casing shall be set before completing the well for production. The production casing shall be new pipe or reconditioned pipe that has been tested and inspected to verify a new condition. It shall be cemented in a manner necessary to cover or isolate all zones which contain hydrocarbons, but in any case, a calculated volume sufficient to fill the annular space at least 500 feet above the uppermost producible hydrocarbon zone must be used. When a liner is used as production casing, the testing of the seal between the liner top and next larger string shall be conducted as in the case of intermediate liners.

E. Pressure Testing. Prior to drilling the plug after cementing, all casing strings, except the drive or structural casing, shall be pressure tested as shown in the table below. This test shall not exceed the working pressure of the casing. The surface casing shall be tested with water in the top 100 feet of the casing. If the pressure declines more than 10% in 30 minutes, or if there is other indication of a leak, the casing shall be recemented, repaired, or an additional casing string run, and the casing shall be tested again in the same manner.

Casing String	Minimum Pressure Test (psi)
Conductor	200
Surface	1,000
Intermediate	1,500 or 0.2 psi/ft., whichever is greater
Liner	1,500 or 0.2 psi/ft., whichever is greater
Production	1,500 or 0.2 psi/ft., whichever is greater

After cementing any of the above strings, drilling shall not be commenced until a time lapse of:

(1) 24 hours, or

(2) 8 hours under pressure for conductor casing string. 12 hours under pressure for all other strings. (Cement is considered under pressure if one or more float valves are employed and are shown to be holding the cement in place or when other means of holding pressure is used.)

All casing pressure tests shall be recorded on the driller's log.

2. Blowout Prevention Equipment. Blowout preventers and related well control equipment shall be installed, used, and tested in a manner necessary to prevent blowouts. Prior to drilling below the conductor casing, blowout prevention equipment shall be installed and maintained ready for use until drilling operations are completed, as follows:

A. Conductor Casing. Before drilling below this string, at least one remotely controlled bag-type blowout preventer and equipment for circulating the drilling fluid to the drilling structure or vessel shall be installed. To avoid formation fracturing from complete shut-in of the well, a large diameter pipe with control valves shall be installed on the conductor casing below the blowout preventer so as to permit the diversion of hydrocarbons and

other fluids; except that when the blowout preventer assembly is on the Gulf floor, the choke and kill lines shall be equipped to permit the diversion of hydrocarbons and other fluids.

B. *Surface Casing. Before drilling below this string the blowout prevention equipment shall include a minimum of: (1) three remotely controlled, hydraulically operated, blowout preventers with a working pressure which exceeds the maximum anticipated surface pressure, including one equipped with pipe rams, one with blind rams, and one bag-type; (2) a drilling spool with side outlets, if side outlets are not provided in the blowout preventer body; (3) a choke manifold; (4) a kill line; and (5) a fill-up line.*

C. *Intermediate Casing. Before drilling below this string the blowout prevention equipment shall include a minimum of: (1) four remotely controlled, hydraulically operated, blowout preventers with a working pressure which exceeds the maximum anticipated surface pressure, including at least one equipped with pipe rams, one with blind rams, and one bag-type; (2) a drilling spool with side outlets, if side outlets are not provided in the blowout preventer body; (3) a choke manifold; (4) a kill line; and (5) a fill-up line.*

D. *Testing. Ram-type blowout preventers and related control equipment shall be tested with water to the rated working pressure of the stack assembly or to the working pressure of the casing, whichever is the lesser, (1) when installed; (2) before drilling out after each string of casing is set; (3) not less than once each week while drilling; and (4) following repairs that require disconnecting a pressure seal in the assembly. The bag-type blowout preventer shall be tested to 70 percent of the above pressure requirements.*

While drill pipe is in use ram-type blowout preventers shall be actuated to test proper functioning once each trip, but in no event less than once each day. The bag-type blowout preventer shall be actuated on the drill pipe once each week. Accumulators or accumulators and pumps shall maintain a pressure capacity reserve at all times to provide for repeated operation of hydraulic preventers. A blowout prevention drill shall be conducted weekly for each drilling crew to insure that all

equipment is operational and that crews are properly trained to carry out emergency duties. All blowout preventer tests and crew drills shall be recorded on the driller's log.

E. *Other Equipment. An inside blowout preventer assembly (back pressure valve) and drill string safety valve in the open position shall be maintained on the rig floor at all times while drilling operations are being conducted. Separate valves shall be maintained on the rig floor to fit all pipe in the drill string. A Kelly cock shall be installed below the swivel, and an essentially full opening Kelly cock shall be installed at the bottom of the Kelly of such design that it can be run through the blowout preventers.*

3. *Mud Program - General. The characteristics, use, and testing of drilling mud and the conduct of related drilling procedures shall be such as are necessary to prevent the blowout of any well. Quantities of mud materials sufficient to insure well control shall be maintained readily accessible for use at all times.*

A. *Mud Control. Before starting out of hole with drill pipe, the mud shall be circulated with the drill pipe just off bottom until the mud is properly conditioned. When coming out of the hole with drill pipe, the annulus shall be filled with mud before the mud level drops below 100 feet, and a mechanical device for measuring the amount of mud required to fill the hole shall be utilized. The volume of mud required to fill the hole shall be watched, and any time there is an indication of swabbing, or influx of formation fluids, the necessary safety device(s) required in sub-paragraph 2(E) above shall be installed on the drill pipe, the drill pipe shall be run to bottom, and the mud properly conditioned. The mud shall not be circulated and conditioned except on or near bottom, unless well conditions prevent running the pipe to bottom. The mud in the hole shall be circulated or reverse circulated prior to pulling drill stem test tools from the hole.*

B. *Mud Testing Equipment. Mud testing equipment shall be maintained on the drilling platform at all times, and mud tests shall be performed daily, or more frequently as conditions warrant.*

The following mud system monitoring equipment must be installed (with derrick floor indicators) and used throughout the period of drilling after setting and cementing the conductor casing:

(1) Recording mud pit level indicator to determine mud pit volume gains and losses. This indicator shall include a visual or audio warning device.

(2) Mud volume measuring device for accurately determining mud volumes required to fill the hole on trips.

(3) Mud return indicator to determine that returns essentially equal the pump discharge rate.

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

PLUGGING AND ABANDONMENT OF WELLS

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.15. The operator shall comply with the following minimum plugging and abandonment procedures which have general application to all wells drilled for oil and gas. Plugging and abandonment operations must not be commenced prior to obtaining approval from an authorized representative of the Geological Survey. Oral approvals shall be in accordance with 30 CFR 250.13. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. Permanent Abandonment.

   A. Isolation in Uncased Hole. In uncased portions of wells, cement plugs shall be spaced to extend 100 feet below the bottom to 100 feet above the top of any oil, gas, and fresh water zones so as to isolate them in the strata in which they are found and to prevent them from escaping into other strata.

   B. Isolation of Open Hole. Where there is open hole (uncased and open into the casing string above) below the casing, a cement plug shall be placed in the deepest casing string by (1) or (2) below, or in the event lost circulation conditions exist or are anticipated, the plug may be placed in accordance with (3) below:

      (1) A cement plug placed by displacement method so as to extend a minimum of 100 feet above and 100 feet below the casing shoe.

      (2) A cement retainer with effective back pressure control set not less than 50 feet, nor more than 100 feet, above the casing shoe with a cement plug calculated to extend at least 100 feet below the casing shoe and 50 feet above the retainer.

      (3) A permanent type bridge plug set within 150 feet above the casing shoe with 50 feet of cement on top of the bridge plug. This plug shall be tested prior to placing subsequent plugs.

C. Plugging or Isolating Perforated Intervals. A cement plug shall be placed opposite all open perforations (perforations not squeezed with cement) extending a minimum of 100 feet above and 100 feet below the perforated interval or down to a casing plug whichever is less. In lieu of the cement plug, a bridge plug set at a maximum of 150 feet above the open perforations with 50 feet of cement on top may be used provided the perforations are isolated from the hole below.

D. Plugging of Casing Stubs. If casing is cut and recovered, a cement plug 200 feet in length shall be placed to extend 100 feet above and 100 feet below the stub. A retainer may be used in setting the required plug.

E. Plugging of Annular Space. No annular space that extends to the Gulf floor shall be left open to drilled hole below. If this condition exists, the annulus shall be plugged with cement.

F. Surface Plug Requirement. A cement plug of a least 150 feet, with the top of the plug 150 feet or less below the Gulf floor, shall be placed in the smallest string of casing which extends to the surface.

G. Testing of Plugs. The setting and location of the first plug below the top 150-foot plug, will be verified by either (1) placing a minimum pipe weight of 15,000 pounds on the plug, or (2) testing with a minimum pump pressure of 1,000 psig with no more than a 10 percent pressure drop during a 15-minute period.

H. Mud. Each of the respective intervals of the hole between the various plugs shall be filled with mud fluid of sufficient density to exert hydrostatic pressure exceeding the greatest formation pressure encountered while drilling such interval.

I. Clearance of Location. All casing and piling shall be severed and removed to at least 15 feet below the Gulf floor and the location shall be dragged to clear the well site of any obstructions.

2. Temporary Abandonment. Any drilling well which is to be temporarily abandoned shall be mudded and cemented as required for permanent abandonment except for requirements F and I of paragraph 1 above. When casing extends above the Gulf floor, a mechanical bridge plug (retrievable or permanent) shall be set in the casing between 15 and 200 feet below the Gulf floor.

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

SUSPENSIONS AND DETERMINATION OF WELL PRODUCIBILITY

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.12(d)(1). An OCS lease provides for extension beyond its primary term for as long as oil or gas may be produced from the lease in paying quantities. An OCS lease may be maintained beyond the primary term, in the absence of actual production, when a suspension of operations or production, or both, has been approved. An application for suspension of production for an initial period should be submitted prior to the expiration of the term of a lease. The supervisor may approve a suspension of production provided at least one well has been drilled on the lease and determined to be capable of being produced in paying quantities. The temporary or permanent abandonment of a well will not preclude approval of a suspension of production as provided in 30 CFR 250.12(d)(1). Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

A well may be determined to be capable of producing in paying quantities when the requirements of either 1 or 2 below have been met.

1. Production Tests.

   A. Oil Wells. A production test of at least two hours duration, following stabilization, is required.

   B. Gas Wells. A deliverability test of at least two hours duration, following stabilization, or a four-point back-pressure test, is required.

   C. Witnessing and Results. All tests must be witnessed by an authorized representative of the Geological Survey. Test data accompanied by operator's affidavit, or third-party test data, may be accepted in lieu of a witnessed test provided prior approval is obtained from the appropriate district office. The results of the witnessed or accepted test must justify a determination that the well is capable of producing in paying quantities.

2. Production Capability. Information for determining producibility should be submitted in time to permit one week for evaluation and determination. In cases of urgency, determinations may be conveyed orally. The following may be considered as acceptable evidence that a well is capable of producing in paying quantities:

A. An induction-electric log of the well, clearly showing a minimum of 15 feet of producible sand in one section which does not include any interval which appears to be water saturated. All of the section counted as producible must exhibit the following properties:

(1) Electrical spontaneous potential exceeding 20 negative millivolts beyond the shale base line. If mud conditions prevent a 20 negative millivolt reading beyond the shale base line, a gamma ray log deflection of at least 70 percent of the maximum gamma ray deflection in the nearest clean water bearing sand may be substituted.

(2) A minimum true resistivity ratio of the producible section to the nearest clean water sand of at least 5:1, provided the producible section exhibits a minimum resistivity of 2.0 ohm-meters.

(3) A porosity log indicating porosity in the producible section.

B. Sidewall cores and core analysis which indicates that the section is producible.

C. A wire line formation test or evidence that an attempt was made to obtain such test. The test results must indicate that the section is producible.

D. All logs run must support other evidence that the section is producible.

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief, Conservation Division

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GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

INSTALLATION OF SUBSURFACE SAFETY DEVICE

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.41(b). Section 250.41(b) provides as follows:

> (b) Completed Wells. In the conduct of all its operations, the lessee shall take all steps necessary to prevent blowouts, and the lessee shall immediately take whatever action is required to bring under control any well over which control has been lost. The lessee shall: (1) in wells capable of flowing oil or gas, when required by the supervisor, install and maintain in operating condition storm chokes or similar subsurface safety devices; (2) for producing wells not capable of flowing oil or gas, install and maintain surface safety valves with automatic shutdown controls; and (3) periodically test or inspect such devices or equipment as prescribed by the supervisor.

The operator shall comply with the following requirements. All departures from the requirements specified in this Order shall be subject to approval pursuant to 30 CFR 250.12(b). All applications for approval under the provisions of this Order shall be submitted to the appropriate District office. References in this Order to approvals, determinations, or requirements are to those given or made by the Supervisor or his delegated representative.

1. Installation. All new and existing tubing installations open to hydrocarbon-bearing zones shall be equipped with a subsurface-controlled or a surface- or other remotely controlled subsurface safety device, to be installed at a depth of 100 feet or more below the sea floor unless, after application and justification, the well is determined to be incapable of flowing oil or gas. These installations shall be made as required in subparagraphs A and B below within two (2) days after stabilized production is established, and during this period of time the well shall not be left unattended while open to production.

A. *New Wells. All tubing installations in wells completed after December 1, 1972, shall be equipped with a surface- or other remotely controlled subsurface safety device; provided, that wells with a shut-in tubing pressure of 4,000 psig or greater shall be equipped with a subsurface-controlled subsurface safety device in lieu of a surface- or other remotely controlled subsurface safety device unless a surface- or other remotely controlled subsurface safety device is approved or required. When the shut-in tubing pressure declines below 4,000 psig, a surface- or other remotely controlled subsurface safety device shall be installed when the tubing is first removed and reinstalled.*

B. *Existing Wells. All tubing installations in wells existing on the date of this Order shall be equipped with a surface- or other remotely controlled subsurface safety device when the tubing is first removed and reinstalled after December 1, 1972; provided, that wells with a shut-in tubing pressure of 4,000 psig or greater shall be equipped with a subsurface-controlled subsurface safety device in lieu of a surface- or other remotely controlled subsurface safety device unless a surface- or other remotely controlled subsurface safety device is approved or required. When the shut-in tubing pressure declines below 4,000 psig, a surface- or other remotely controlled subsurface safety device shall be installed when the tubing is first removed and reinstalled.*

Tubing installations in existing wells completed from single-well and multi-well satellite caissons or jackets and sea-floor completions may be equipped with a subsurface-controlled subsurface safety device, in lieu of a surface- or other remotely controlled subsurface safety device, upon application, justification, and approval.

C. *Shut-in Wells. A tubing plug shall be installed in lieu of, or in addition to, other subsurface safety devices if a well has been shut in for a period of six (6) months. Such plugs shall be set at a depth of 100 feet or more below the sea floor. All retrievable plugs installed after the date of this Order shall be of the pump-through type. All wells perforated and completed, but not placed on production, shall be equipped with a subsurface safety device or tubing plug within two (2) days after completion.*

D. *Injection Wells. Subsurface safety devices as required in subparagraphs A and B above shall be installed in all injection wells unless, after application and justification, it is determined that the well is incapable of flowing oil or gas, which condition shall be verified annually.*

2. Technological Advancement. As technological research, progress, and product improvement result in increased effectiveness of existing safety devices or the development of new devices or systems, such devices or systems may be required or used upon application, justification, and approval. Applications for routine use shall include evidence that the device or system has been field-tested at least once each month for a minimum of six (6) consecutive months, and that each test indicated proper operation.

3. Testing and Inspection. Subsurface safety devices shall be designed, adjusted, installed, and maintained to insure reliable operation. During testing and inspection procedures, the well shall not be left unattended while open to production unless a properly operating subsurface safety device has been installed in the well.

   A. Surface-Controlled Subsurface Safety Devices. Each surface- or other remotely controlled subsurface safety device installed in a well shall be tested in place for proper operation when installed and thereafter at intervals not exceeding six (6) months. If the device does not operate properly, it shall be removed, repaired, and reinstalled or replaced and tested to insure proper operation.

   B. Subsurface-Controlled Subsurface Safety Devices. Each subsurface-controlled subsurface safety device installed in a well shall be removed, inspected, and repaired or adjusted as necessary and reinstalled at intervals not exceeding six (6) months; provided, that such removable devices set in a landing nipple shall be removed, inspected, and repaired or adjusted as necessary and reinstalled at intervals not exceeding twelve (12) months. Each velocity-type device shall be designed to close at a flow rate not to exceed the larger of either 150 percent of, or 200 BFPD above, the most recent well-test rate which equals or exceeds the approved production rate. The above closing flow rate shall not exceed the calculated capacity of the well to produce against a flowing wellhead pressure of 50 psig. Each preset tubing-pressure-actuated device shall be designed to close prior to reduction of the flowing wellhead pressure to 50 psig.

   C. Tubing Plugs. A shut-in well equipped with a tubing plug shall be inspected for leakage by opening the well to possible flow at intervals not exceeding six (6) months. If sustained liquid flow exceeds 400 cc/min., or gas flow exceeds 15 cu. ft./min., the plug shall be removed, repaired, and reinstalled or an additional tubing plug installed to prevent leakage.

4. Temporary Removal. Each wireline- or pumpdown-retrievable subsurface safety device may be removed, without further authority or notice, for a routine operation which does not require approval of a Sundry Notice and Report on Wells (Form 9-331) for a period not to exceed fifteen (15) days. The well shall be clearly identified as being without a subsurface safety device and shall not be left unattended while open to production. The provisions of this paragraph are not applicable to the testing and inspection procedures in paragraph 3 above.

5. Additional Protective Equipment. All tubing installations made after the date of this Order in which a wireline- or pumpdown-retrievable subsurface safety device is to be installed shall be equipped with a landing nipple, with flow couplings or other protective equipment above and below, to provide for setting of the subsurface safety device. All wells in which a subsurface safety device or tubing plug is installed shall have the tubing-casing annulus packed off above the uppermost open casing perforations. The control system for all surface-controlled subsurface safety devices shall be an integral part of the platform shut-in system, or of an independent remote shut-in system.

6. Departures. All departures (or waivers) approved prior to the date of this Order are hereby terminated as of December 1, 1972, unless new applications are submitted prior to that date. All such new applications will be considered for approval pursuant to 30 CFR 250.12(b) and the requirements of this Order. All applications for departures shall include a detailed statement of the well conditions, efforts made to overcome any difficulties, and proposed alternate safety measures.

7. Emergency Action. All tubing installations open to hydrocarbon-bearing zones and not equipped with a subsurface safety device as permitted by this Order shall be clearly identified as not being so equipped, and a subsurface safety device or tubing plug shall be available at the field location. In the event of an emergency, such as an impending hurricane, such device or plug shall be promptly installed within the limits of practicability, due consideration being given to personnel safety.

8. Records. The operator shall maintain the following records for a minimum period of one year for each subsurface safety device and tubing plug installed, which records shall be available to any authorized representative of the Geological Survey.

   A. Field Records. Individual well records shall be maintained at or near the field and shall include, as a minimum, the following information:

(1) A record which will give design and other information; i.e., make, model, type, spacers, bean and spring size, pressure, etc.

(2) Verification of assembly by a qualified person in charge of installing the device and installation date.

(3) Verification of setting depth and all operational tests as required in this Order.

(4) Removal date, reason for removal, and reinstallation date.

(5) A record of all modifications of design in the field.

(6) All mechanical failures or malfunctions, including sand-cutting, of such devices, with notation as to cause or probable cause.

(7) Verification that a failure report was submitted.

B. Other Records. The following records, as a minimum, shall be maintained at the operator's office:

(1) Verified design information of subsurface-controlled subsurface safety devices for the individual well.

(2) Verification of assembly and installation according to design information.

(3) All failure reports.

(4) All laboratory analysis reports of failed or damaged parts.

(5) Quarterly failure-analysis report.

9. Reports. Well completion reports (Form 9-330) and any subsequent reports of workover (Form 9-331) shall include the type and the depth of the subsurface safety devices and tubing plugs installed in the well or indicate that a departure has been granted.

To establish a failure-reporting and corrective-action program as a basis for reliability and quality control, each operator shall submit a quarterly failure-analysis report to the office of the Supervisor, identifying mechanical failures by lease and well, make and model, cause or probable cause of failure, and action taken to correct the failure. The reporting period shall begin the first day of the month following the date of this

Order. The reports shall be submitted by February 28, May 31, August 31, and November 30 for the periods ending January 31, April 30, July 31, and October 31 of each year.

Robert F. Evans
Supervisor

Approved: June 5, 1972

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
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GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

PROCEDURE FOR COMPLETION OF OIL AND GAS WELLS

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.92. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. Wellhead Equipment and Testing Procedures.

   A. Wellhead Equipment. All completed wells shall be equipped with casingheads, wellhead fittings, valves and connections with a rated working pressure equal to or greater than the surface shut-in pressure of the well. Connections and valves shall be designed and installed to permit fluid to be pumped between any two strings of casing. Two master valves shall be installed on the tubing in wells with a surface pressure in excess of five thousand pounds per square inch. All wellhead connections shall be assembled and tested, prior to installation, by a fluid pressure which shall be equal to the rated test pressure of the fitting to be installed.

   B. Testing Procedure. Any wells showing sustained pressure on the casinghead, or leaking gas or oil between the production casing and the next larger casing string, shall be tested in the following manner: The well shall be killed with water or mud and pump pressure applied. Should the pressure at the casinghead reflect the applied pressure, the casing shall be condemned. After corrective measures have been taken, the casing shall be tested in the same manner. This testing procedure shall be used when the origin of the pressure cannot be determined otherwise.

2. Storm Choke. All completed wells shall meet the requirements prescribed in OCS Order No. 5.

3. *Procedures for Multiple or Tubingless Completions.*

A. *Multiple Completions.*

(1) *Information shall be submitted on, or attached to, Form 9-331 showing top and bottom of all zones proposed for completion or alternate completion, including a partial electric log and a diagrammatic sketch showing such zones and equipment to be used.*

(2) *When zones approved for multiple completion become intercommunicated the lessee shall immediately repair and separate the zones after approval is obtained.*

B. *Tubingless Completions.*

(1) *All tubing strings in a multiple completed well shall be run to the same depth below the deepest producible zone.*

(2) *The tubing string(s) shall be new pipe and cemented with a sufficient volume to extend a minimum of 500 feet above the uppermost producible zone.*

(3) *A temperature or cement bond log shall be run in all tubingless completion wells where lost circulation or other unusual circumstances occur during the cementing operations.*

(4) *Information shall be submitted on, or attached to, Form 9-331 showing the top and bottom of all zones proposed for completion or alternate completion, including a partial electric log and a diagrammatic sketch showing such zones and equipment to be used.*

Robert F. Evans
Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Russell G. Wayland
Chief, Conservation Division

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NOTICE TO LESSEES AND OPERATORS OF FEDERAL LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

POLLUTION AND WASTE DISPOSAL

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.43. Section 250.43 provides as follows:

(a) The lessee shall not pollute land or water or damage the aquatic life of the sea or allow extraneous matter to enter and damage any mineral- or water-bearing formation. The lessee shall dispose of all liquid and non-liquid waste materials as prescribed by the supervisor. All spills or leakage of oil or waste materials shall be recorded by the lessee and, upon request of the supervisor, shall be reported to him. All spills or leakage of a substantial size or quantity, as defined by the supervisor, and those of any size or quantity which cannot be immediately controlled also shall be reported by the lessee without delay to the supervisor and to the Coast Guard and the Regional Director of the Federal Water Pollution Control Administration. All spills or leakage of oil or waste materials of a size or quantity specified by the designee under the pollution contingency plan shall also be reported by the lessee without delay to such designee.

(b) If the waters of the sea are polluted by the drilling or production operations conducted by or on behalf of the lessee, and such pollution damages or threatens to damage aquatic life, wildlife, or public or private property, the control and total removal of the pollutant, wheresoever found, proximately resulting therefrom shall be at the expense of the lessee. Upon failure of the lessee to control and remove the pollutant the supervisor, in cooperation with other appropriate agencies of the Federal, State and local governments, or in cooperation with the lessee, or both, shall have the right to accomplish the control and removal of the pollutant in accordance with any established contingency plan for combating oil spills or by other means at the cost of the lessee. Such action shall not relieve the lessee of any responsibility as provided herein.

(c) The lessee's liability to third parties, other than for cleaning up the pollutant in accordance with subsection (b) above, shall be governed by applicable law.

The operator shall comply with the following requirements. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. Pollution Prevention. In the conduct of all oil, gas and sulphur operations, the operator shall prevent pollution of the waters of the Gulf of Mexico. The operator shall comply with the following pollution prevention requirements:

A. Liquid Disposal.

(1) Oil in any form shall not be disposed of into the waters of the Gulf.

(2) Liquid waste materials containing substances which may be harmful to aquatic life or wildlife, or injurious in any manner to life or property, shall be treated to avoid disposal of harmful substances into the waters of the Gulf.

(3) Drilling mud containing oil shall not be disposed of into the Gulf. Drilling mud containing toxic substances shall be neutralized prior to disposal.

B. Solid Waste Disposal.

(1) Drill cuttings, sand, and other solids containing oil shall not be disposed of into the Gulf unless the oil has been removed..

(2) Mud containers and other solid waste materials shall be incinerated or transported to shore for disposal.

C. Production Facilities.

(1) All production facilities, such as separators, tanks, treaters, and other equipment, shall be such as are necessary to control the maximum anticipated pressures and production of oil, gas, and sulphur, and shall be maintained at all times in a manner necessary to prevent pollution.

(2) All platforms and structures shall be curbed and connected by drains to a collecting tank or sump unless drip pans, or equivalents, are placed under equipment, from which a pollutant may spill into the Gulf, and piped to a tank or sump.

(3) The operator's personnel shall be thoroughly instructed in the techniques of equipment maintenance and operation for the prevention of pollution. Non-operator personnel shall be informed in writing, prior to executing contracts, of the operator's obligations to prevent pollution.

2. Inspections and Reports. The operator shall comply with the following pollution inspection and reporting requirements:

A. Pollution Inspections.

(1) Manned facilities shall be inspected daily.

(2) Unattended facilities, including those equipped with remote control and monitoring systems, shall be inspected at frequent intervals. The district engineer may prescribe the frequency of inspections for these facilities.

B. Pollution Reports.

(1) All spills or leakage of oil and liquid pollutants shall be recorded showing the cause, size of spill, and action taken, and the record shall be maintained and available for inspection by the supervisor. All spills or leakage of less than 15 barrels shall be reported to the district engineer when requested by him.

(2) All spills or leakage of oil and liquid pollutants of 15 to 50 barrels shall be reported orally to the district engineer without delay and shall be confirmed in writing.

(3) All spills or leakage of oil and liquid pollutants of a substantial size or quantity, which is defined as more than 50 barrels, and those of any size or quantity which cannot be immediately controlled, shall be reported orally without delay to the supervisor, the district engineer, the Coast Guard, and the Regional Director, Federal Water Pollution Control Administration. All oral reports shall be confirmed in writing.

(4) Operators shall notify each other upon observation of equipment malfunction or pollution resulting from another's operation.

3. Control and Removal.

A. Corrective Action. Immediate corrective action shall be taken in all cases where pollution has occurred. Each operator shall have an emergency plan for initiating corrective action to control and remove pollution and such plan shall be filed with the supervisor. Corrective action taken under the plan shall be subject to modification when directed by the supervisor.

B. Equipment. Standby pollution control equipment shall be maintained by or shall be immediately available to each operator at a land base location. This equipment shall include containment booms, skimming apparatus, and approved chemical dispersants and shall be available prior to the commencement of operations. The equipment shall be regularly inspected and maintained in good condition for use. The equipment and the location of land bases shall be approved by the supervisor. The operator shall notify the supervisor of the location at which such equipment is located for operations conducted on or for each lease. All changes in location and equipment maintained at each location shall be approved by the supervisor.

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

APPROVAL PROCEDURE FOR INSTALLATION AND OPERATION OF PLATFORMS, FIXED AND MOBILE STRUCTURES, AND ARTIFICIAL ISLANDS

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.19(a). Section 250.19(a) provides as follows:

> (a) The Supervisor is authorized to approve the design, other features, and plan of installation of all platforms, fixed structures, and artificial islands as a condition of the granting of a right of use or easement under Paragraphs (a) and (b) of Section 250.18 or authorized under any lease issued or maintained under the Act.

The operator shall be responsible for compliance with the requirements of this Order in the installation and operation of all platforms, fixed and mobile structures, and artificial islands, including all facilities installed on a platform or structure whether or not operated or owned by the operator. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. The following requirements are applicable to all platforms approved and installed subsequent to the effective date of this Order, and to all platforms when structural and equipment modifications are to be made:

   A. General Design. The design of platforms, fixed structures, and artificial islands shall include consideration of such factors as water depth, surface and subsurface soil conditions, wave and current forces, wind forces, total equipment weight, and other pertinent geological, geographical, environmental, and operational conditions.

B. Application. The operator shall submit, in duplicate, the following to the appropriate District Office for approval:

(1) Design Features. Information relative to design features on an 8" x 10½" plat or plats showing the platform dimensions, plan and two elevations, number and location of well slots, and water depth. In addition, the plat shall include:

(a) Nominal size and thickness range of piling.

(b) Nominal size and thickness range of jacket column leg.

(c) Nominal size and thickness range of deck column leg.

(d) Design piling penetration.

(e) Maximum bearing and lateral load per pile in tons.

(f) Identification data which shall be the lease number, block number, area, and operator.

(g) The following certification signed and dated with the title of the company representative:

"__Operator__ certifies that this platform has been certified by a registered professional engineer and that the structure will be constructed, operated, and maintained as described in the application, and any approved modification thereto. Certified plans are on file at _____."

(2) Non-design Features. Information relative to non-design features including the following:

(a) Primary use intended, including drilling, production of oil and gas, sulphur, or salt.

(b) Personnel and personnel transfer facilities including living quarters, boat landings, and heliport.

(c) Type of deck, such as steel or wood, and whether coated with protective material.

(d) Method of protection from corrosion.

(e) Production facilities including separators, treaters, storage tanks, compressors, line pumps, and metering devices, except that when initially designed and utilized for drilling, this information may be submitted prior to installation.

(f) Safety and pollution control equipment and features.

(g) Other information when required.

C. Certified Plan. Detailed structural plans certified by a registered professional engineer shall be on file and maintained by the operator or his designee.

2. Safety and Pollution Control Equipment and Procedures.

A. The following requirements shall apply to all platforms. Operators of platforms installed prior to the effective date of this Order shall comply with the requirements of subparagraphs (1)(a) through (f), (2), and (3) within three months, with subparagraphs (1)(g) and (4) within six months, and with subparagraphs (5), (6), (7), (8), and (9) within one year, from the effective date of this Order.

(1) The following shut-in devices shall be installed and maintained in an operating condition on all pressurized vessels and water separation facilities when such vessels and separation facilities are in service. The operator shall submit records to the appropriate District Office semi-annually showing the present status and past history of each device including dates and details of inspection, testing, repairing, adjustment, and reinstallation.

(a) *All separators shall be equipped with high-low pressure shut-in sensors, low level shut-in controls, and a relief valve. High liquid level control devices shall be installed when the vessel can discharge to a flare.*

(b) *All pressure surge tanks shall be equipped with a high and low pressure shut-in sensor, a high level shut-in control, flare line, and relief valve.*

(c) *Atmospheric surge tanks shall be equipped with a high level shut-in sensor.*

(d) *All other hydrocarbon handling pressure vessels shall be equipped with high-low pressure shut-in sensors, high-low level shut-in controls, and relief valves, unless determined to be otherwise protected.*

(e) *Pilot-operated pressure relief valves shall be equipped to permit testing with an external pressure source. Spring-loaded pressure relief valves shall either be bench-tested or equipped to permit testing with an external pressure source. A relief valve shall be set no higher than the designed working pressure of the vessel. The high pressure shut-in sensor shall be set no higher than 5% below the rated or designed working pressure and the low pressure shut-in sensor shall be set no lower than 10% below the lowest pressure in the operating pressure range on all vessels with a rated or designed working pressure of more than 400 psi. On lower pressure vessels the above percentages shall be used as guidelines for sensor settings considering pressure and operating conditions involved; except that sensor settings shall not be within 5 psi of the rated or designed working pressure or the lowest pressure in the operating pressure range.*

(f) *All sensors shall be equipped to permit testing with an external pressure source.*

(g) *All flare lines shall be equipped with a scrubber or similar separation equipment.*

(2) The following remote and local automatic shut-in devices shall be installed and maintained in an operating condition at all times when the affected well (or wells) is producing. The operator shall submit records to the appropriate District Office semi-annually showing the present status and past history of each such device including dates and details of inspection, testing, repairing, adjustment, and reinstallation.

(a) All wellhead assemblies shall be equipped with an automatic fail-close valve. Automatic safety valves temporarily out of service shall be flagged.

(b) All flowlines from wellheads shall be equipped with high-low pressure sensors located close to the wellhead. The pressure sensors shall be set to activate the wellhead valve in the event of abnormal pressures in the flowline.

(c) All headers shall be equipped with check valves on the individual flowlines. The flowline and valves from each well located upstream of, and including, the header valves shall withstand the shut-in pressure of that well, unless protected by a relief valve with connections to bypass the header. If there is an inlet valve to a separator, the valve, flowline, and all equipment upstream of the valve shall also withstand shut-in wellhead pressure, unless protected by a relief valve with connections to bypass the header.

(d) All pneumatic shut-in control lines shall be equipped with fusible material at strategic points.

(e) Remote shut-in controls shall be located on the helicopter deck and all exit stairway landings, including at least one on each boat landing. These controls shall be quick-opening valves.

(f) *All pressure sensors shall be tested for proper pressure settings monthly for at least four months. At such time as the monthly results are consistent, a quarterly test shall be required for at least one year. If these results are consistent, a longer period of time between testing may then be approved by the Supervisor. In the event any testing sequence reveals inconsistent results, the monthly testing sequence shall be reinstituted. Results of all tests shall be recorded and maintained in the field.*

(g) *All automatic wellhead safety valves shall be tested for operation weekly. All automatic wellhead safety valves shall be tested for holding pressure monthly. If these results are consistent, a longer period of time between pressure tests, not to exceed quarterly, may then be approved by the Supervisor. In the event that any pressure testing sequence, exceeding monthly, reveals inconsistent results, the monthly testing sequence shall be reinstituted. Results of all tests shall be recorded and maintained in the field.*

(h) *Check valves shall be tested for holding pressure monthly for at least four months. At such time as the monthly results are satisfactory, a quarterly test shall be required for at least one year. If these results are consistent, a longer period of time between testing may then be approved by the Supervisor. In the event any testing sequence reveals inconsistent results, the monthly testing sequence shall be reinstituted. Results of all tests shall be recorded and maintained in the field.*

(i) *A complete testing and inspection of the safety system shall be witnessed by Geological Survey representatives at the time production is commenced. Thereafter, the operator shall arrange for a test every six months. The test shall be conducted when it can be witnessed by Geological Survey representatives.*

(j) A standard procedure for testing of safety equipment shall be prepared and posted in a prominent place on the platform.

(3) Curbs, gutters, and drains shall be constructed in all deck areas in a manner necessary to collect all contaminants, unless drip pans or equivalent are placed under equipment and piped to a sump which will automatically maintain the oil at a level sufficient to prevent discharge of oil into the Gulf waters. Alternate methods to obtain the same results will be acceptable. These systems shall not permit spilled oil to flow into the wellhead area.

(4) An auxiliary electrical power supply shall be installed to provide emergency power capable of operating all electrical equipment required to maintain safety of operation in the event the primary electrical power supply fails.

(5) The following requirements shall apply to the handling and disposal of all produced waste water discharged into the Gulf of Mexico. The disposal of waste water other than into the Gulf waters shall have the method and location approved by the Supervisor.

(a) Water discharged shall not create conditions which will adversely affect the public health or the use of the waters for the propagation of aquatic life, recreation, navigation, or other legitimate uses.

(b) Waste water disposal systems shall be designed and maintained to reduce the oil content of the disposed water to an average of not more than fifty ppm. An effluent sampling station shall be located at a point prior to discharge into the receiving waters where a representative sample of the treated effluent can be obtained. On one day each month four effluent samples shall be taken within a 24-hour period and determinations shall be made on the temperature, suspended solids, settleable solids, pH, total oil content, and volume of sample obtained.

All samples shall be taken and all analyses for oil content shall be performed in accordance with the American Society for Testing and Materials test D1340, "Oily Matter in Industrial Waste Water". The Supervisor may approve different methods for determination of oil content if the method to be used is indicated to be reliable. No effluent containing in excess of one hundred ppm of total oil content shall be discharged into the Gulf of Mexico. A written report of the results shall be furnished to the Regional Office annually. The report shall contain dates, time and location of sample, volumes of waste discharge on the date of sampling in barrels per day, and the results of the specific analysis and physical observations.

(6) A firefighting system shall be installed and maintained in an operating condition in accordance with the following:

(a) A fixed automatic water spray system shall be installed in all inadequately ventilated wellhead areas as these areas are defined in Paragraph 9 API RP 500A. These systems shall be installed in accordance with the most current edition of National Fire Protection Association's Pamphlet No. 15.

(b) A firewater system of rigid pipe with fire hose stations shall be installed and may include a fixed water spray system. Such a system shall be installed in a manner necessary to provide needed protection in areas where production handling equipment is located. A firefighting system using chemicals may be considered for installation in certain platform areas in lieu of a firewater system in that area, if determined to provide equivalent fire protection control.

(c) Pumps for the firewater systems shall be inspected and test-operated weekly. A record of the tests shall be maintained in the field and submitted semi-annually to the appropriate District Office. An alternate fuel or power source shall be installed to provide continued pump operation during platform shutdown unless an alternate firefighting system is provided.

(d) Portable fire extinguishers shall be located in the living quarters and in other strategic areas.

(e) A diagram of the firefighting system showing the location of all equipment shall be posted in a prominent place on the platform and a copy submitted to the appropriate District Office.

(7) An automatic gas detector and alarm system shall be installed and maintained in an operating condition in accordance with the following:

(a) Gas detection systems shall be installed in all enclosed areas containing gas handling facilities or equipment and in other enclosed areas which are classified as hazardous areas as defined in API RP 500 and the most current edition of the National Electric Code.

(b) All gas detection systems shall be capable of continuously monitoring for the presence of combustible gas in the areas in which the detection devices are located.

(c) The central control shall be capable of giving an alarm at some point below the lower explosive limit of 1.3% as shown in the Bureau of Mines Bulletin No. 503. This low level shall be for alarm purposes only.

(d) A high level setting of not more than 4.9% shall be used for shut-in sequences and the operation of emergency equipment.

(e) An application for the installation and maintenance of any gas detection system shall be filed with the appropriate District Office for approval. The application shall include the following:

(i) Type, location, and number of detection or sampling heads.

(ii) Cycling, noncycling, and frequency information.

(iii) Type and kind of alarm including emergency equipment to be activated.

(iv) Method used for detection of combustible gas.

(v) Method and frequency of calibration.

(vi) A diagram of the gas detection system.

(vii) Other pertinent information.

(f) A diagram of the gas detection system showing the location of all gas detection points shall be posted in a prominent place on the platform.

(8) The following requirements shall be applicable to all electrical equipment and systems installed:

(a) All engines shall be equipped with low-tension ignition systems containing rigid connections and shielded wiring which shall prevent the release of sufficient electrical energy under normal or abnormal conditions to cause ignition of a combustible mixture.

(b) All electrical generators, motors, and lighting systems shall be installed, protected, and maintained in accordance with the most current edition of the National Electric Code and API RP 500A and B, as appropriate.

(c) Marine-armored cable or metal-clad cable may be substituted for wire in conduit in any area.

(9) Sewage disposal systems shall be installed and used in all cases where sewage is discharged into the Gulf of Mexico. Sewage is defined as human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes. Following sewage treatment, the effluent shall contain 50 ppm or less of biochemical oxygen demand (BOD), 150 ppm or less of suspended solids, and shall have a minimum chlorine residual of 1.0 mg/liter after a minimum retention time of fifteen minutes.

B. The requirements of subparagraphs 2.A(3), (4), (8), and (9) shall apply to all mobile drilling structures used to conduct drilling or workover operations on Federal leases in the Gulf of Mexico.

Robert F. Evans

Robert F. Evans
Supervisor

Approved: October 30, 1970

Russell G. Wayland

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

APPROVAL PROCEDURE FOR OIL AND GAS PIPELINES

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.19(b). Section 250.19(b) provides as follows:

> (b) The Supervisor is authorized to approve the design, other features, and plan of installation of all pipelines for which a right of use or easement has been granted under Paragraph (c) of Section 250.18 or authorized under any lease issued or maintained under the Act, including those portions of such lines which extend onto or traverse areas other than the Outer Continental Shelf.

The operator shall comply with the following requirements. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. General Design. All pipelines shall be designed and maintained in accordance with the following:

   A. The operator shall be responsible for the installation of the following control devices on all oil and gas pipelines connected to a platform including pipelines which are not operated or owned by the operator. Operators of platforms installed prior to the effective date of this Order shall comply with the requirements of subparagraphs (1) and (2) within six months of the effective date of this Order. The operator shall submit records semi-annually showing the present status and past history of each device, including dates and details of inspection, testing, repairing, adjustment, and reinstallation.

      (1) All oil and gas pipelines leaving a platform receiving production from the platform shall be equipped with a high-low pressure sensor to directly or indirectly shut-in the wells on the platform.

(2) (a) All oil and gas pipelines delivering production to production facilities on a platform shall be equipped with an automatic shut-in valve connected to the platform's automatic and remote shut-in system.

(b) All oil and gas pipelines coming onto a platform shall be equipped with a check valve to avoid backflow.

(c) Any oil or gas pipelines crossing a platform which do not deliver production to the platform, but which may or may not receive production from the platform, shall be equipped with high-low pressure sensors to activate an automatic shut-in valve to be located in the upstream portion of the pipeline at the platform. This automatic shut-in valve shall be connected to either the platform automatic and remote shut-in system or to an independent remote shut-in system.

(d) All pipeline pumps shall be equipped with high-low pressure shut-in devices.

B. All pipelines shall be protected from loss of metal by corrosion that would endanger the strength and safety of the lines either by providing extra metal for corrosion allowance, or by some means of preventing loss of metal such as protective coatings or cathodic protection.

C. All pipelines shall be installed and maintained to be compatible with trawling operations and other uses.

D. All pipelines shall be hydrostatically tested to 1.25 times the designed working pressure for a minimum of 2 hours prior to placing the line in service.

E. All pipelines shall be maintained in good operating condition at all times and inspected monthly for indication of leakage using aircraft, floating equipment, or other methods. Records of these inspections including the date, methods, and results of each inspection shall be maintained by the pipeline operator and submitted annually by April 1. The pipeline operator shall submit records indicating the cause, effect, and remedial action taken regarding all pipeline leaks within one week following each such occurrence.

F. *All pipelines shall be designed to be protected against water currents, storm scouring, soft bottoms, and other environmental factors.*

2. *Application. The operator shall submit in duplicate the following to the Supervisor for approval:*

A. *Drawing on 8" x 10½" plat or plats showing the major features and other pertinent data including: (1) water depth, (2) route, (3) location, (4) length, (5) connecting facilities, (6) size, and (7) burial depth, if buried.*

B. *A schematic drawing showing the following pipeline safety equipment and the manner in which the equipment functions: (1) high-low pressure sensors, (2) automatic shut-in valves, and (3) check valves.*

C. *General information concerning the pipeline including the following:*

(1) *Product or products to be transported by the pipeline.*

(2) *Size, weight, and grade of the pipe.*

(3) *Length of line.*

(4) *Maximum water depth.*

(5) *Type or types of corrosion protection.*

(6) *Description of protective coating.*

(7) *Bulk specific gravity of line (with the line empty).*

(8) *Anticipated gravity or density of the product or products.*

(9) *Design working pressure and capacity.*

(10) *Maximum working pressure and capacity.*

(11) *Hydrostatic pressure and hold time to which the line will be tested after installation.*

(12) *Size and location of pumps and prime movers.*

(13) *Any other pertinent information as the Supervisor may prescribe*

3. Completion Report. The operator shall notify the Supervisor when installation of the pipeline is completed and submit a drawing on 8" x 10½" plats showing the location of the line as installed, accompanied by all hydrostatic test data including procedure, test pressure, hold time, and results.

Robert F. Evans
Robert F. Evans
Supervisor

Approved: October 30, 1970

Russell G. Wayland
Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL SULPHUR LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

SULPHUR DRILLING PROCEDURES OFF LOUISIANA AND TEXAS

This Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.34, 250.41, and 250.91. All exploratory core holes for sulphur and all sulphur development wells shall be drilled in accordance with the provisions of this Order, except that development wells shall be drilled in accordance with field rules when established by the supervisor. Each Application to Drill (Form 9-331C) shall include all information required under 30 CFR 250.91 and the integrated casing, cementing, mud, and blowout prevention program for the well. The operator shall comply with the following requirements. Any departures from the requirements specified in this Order must be approved pursuant to 30 CFR 250.12(b).

1. Well Casing and Cementing. All wells shall be cased and cemented in accordance with the requirements of 30 CFR 250.41(a)(1). Special consideration to casing design shall be given to compensate for effects caused by subsidence, corrosion, and temperature variation. All depths refer to true vertical depth (TVD).

   A. Drive or Structural Casing. This casing shall be set by drilling, driving, or jetting to a minimum depth of 100 feet below the Gulf floor, or to such greater depth required to support unconsolidated deposits and to provide hole stability for initial drilling operations. If drilled in, the drilling fluid shall be a type that will not pollute the Gulf, and a quantity of cement sufficient to fill the annular space back to the Gulf floor must be used.

   B. Conductor Casing. This casing shall be set and cemented before drilling into shallow formations known to contain hydrocarbons or, if unknown, upon encountering such formations. Conductor casing shall extend to a depth of not less than 350 feet nor more than 750 feet below the Gulf floor. A quantity of cement sufficient to fill

the annular space back to the Gulf floor must be used. The cement may be washed out or displaced to a depth of 40 feet below the Gulf floor to facilitate casing removal upon well abandonment.

C. Caprock Casing. This casing shall be set at the top of the caprock and be cemented with a quantity of cement sufficient to fill the annular space back to the Gulf floor. Stage cementing or other cementing method shall be used to insure cement returns to the Gulf floor.

2. Blowout Prevention Equipment. Blowout preventers and related well control equipment shall be installed, used, and tested in a manner necessary to prevent blowouts. Prior to drilling below the conductor casing, blowout prevention equipment shall be installed and maintained ready for use until drilling operations are completed, as follows:

A. Conductor Casing. Before drilling below this string, at least one remotely controlled bag-type blowout preventer and equipment for circulating the drilling fluid to the drilling structure or vessel shall be installed. To avoid formation fracturing from complete shut-in of the well, a large diameter pipe with control valves shall be installed on the conductor casing below the blowout preventer so as to permit the diversion of hydrocarbons and other fluids; except that when the blowout preventer assembly is on the Gulf floor, the choke and kill lines shall be equipped to permit the diversion of hydrocarbons and other fluids.

B. Caprock Casing. Before drilling below this string, the blowout prevention equipment shall include a minimum of: (1) three remotely controlled, hydraulically operated, blowout preventers with a working pressure which exceeds the maximum anticipated surface pressure, including one equipped with pipe rams, one with blind rams, and one bag-type; (2) a drilling spool with side outlets, if side outlets are not provided in the blowout preventer body; (3) a choke manifold; (4) a kill line; and (5) a fill-up line.

C. Testing. Ram-type blowout preventers and related control equipment shall be tested with water to the rated working pressure of the stack assembly, or to the working pressure of the casing, whichever is the lesser, (1) when installed; (2) before drilling out after each string of casing is set; (3) not less than once each week while drilling; and (4) following repairs that require disconnecting a pressure seal in the assembly. The bag-type blowout preventer shall be tested to 70 percent of the above pressure requirements.

While drill pipe is in use ram-type blowout preventers shall be actuated to test proper functioning once each day. The bag-type blowout preventer shall be actuated on the drill pipe once each week. Accumulators or accumulators and pumps shall maintain a pressure capacity reserve at all times to provide for repeated operation of hydraulic preventers. A blowout prevention drill shall be conducted weekly for each drilling crew to insure that all equipment is operational and that crews are properly trained to carry out emergency duties. All blowout preventer tests and crew drills shall be recorded on the driller's log.

D. Other Equipment. A drill string safety valve in the open position shall be maintained on the rig floor at all times while drilling operations are being conducted. Separate valves shall be maintained on the rig floor to fit all pipe in the drill string. A Kelly cock shall be installed below the swivel.

3) Mud Program - General. The characteristics, use, and testing of drilling mud and the conduct of related drilling procedures shall be such as are necessary to prevent the blowout of any well. Quantities of mud materials sufficient to insure well control shall be maintained readily accessible for use at all times. The following mud control and testing equipment requirements are applicable to operations conducted prior to drilling below the caprock casing.

A. Mud Control. Before starting out of the hole with drill pipe, the mud shall be circulated with the drill pipe just off bottom until the mud is properly conditioned. When coming out of the hole with drill pipe, the annulus shall be filled with mud before the mud level drops below 100 feet, and a mechanical device for measuring the amount of mud required to fill the hole shall be utilized. The volume of mud required to fill the hole shall be watched,

and any time there is an indication of swabbing, or influx of formation fluids, the drill pipe shall be run to bottom, and the mud properly conditioned. The mud shall not be circulated and conditioned except on or near bottom, unless well conditions prevent running the pipe to bottom.

B. Mud Testing and Equipment. Mud testing equipment shall be maintained on the drilling platform at all times, and mud tests shall be performed daily, or more frequently as conditions warrant.

The following mud system monitoring equipment must be installed (with derrick floor indicators) and used throughout the period of drilling after setting and cementing the conductor casing:

(1) Recording mud pit level indicator to determine mud pit volume gains and losses. This indicator shall include a visual or audio warning device.

(2) Mud volume measuring device for accurately determining mud volumes required to fill the hole on trips.

(3) Mud return indicator to determine that returns essentially equal the pump discharge rate.

Robert F. Evans
Supervisor

Approved: August 28, 1969

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
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BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

INTERIM OIL AND GAS PRODUCTION RATES

This Interim Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.16 and supersedes Interim OCS Order No. 11, dated December 11, 1970, and the first and second revisions thereof, dated February 11, 1971, and March 29, 1971, respectively. The provisions of this Interim Order and the maximum production rates heretofore approved under Interim Order No. 11, dated December 11, 1970, will remain in full force and effect until superseded, amended, or terminated. 30 CFR 250.16 provides as follows:

> Well potentials and permissible flow. The supervisor is authorized to specify the time and method for determining the potential capacity of any well and to fix, after appropriate notice, the permissible production of any such well that may be produced when such action is necessary to prevent waste or to conform with such proration rules, schedules, or procedures as may be established by the Secretary.

In accordance with the notice appearing in the Federal Register, dated December 5, 1970 (35 F.R. 18559), the provisions of this Order are applicable to all oil and gas wells located on the Outer Continental Shelf of the Gulf of Mexico off the State of Texas and the undisputed areas off the State of Louisiana; provided, however, this order shall not apply to any wells on oil and gas leases situated landward of the line, or transected by the line, described in paragraph 3 of the Supplemental Decree entered December 20, 1971, in United States v. Louisiana, S. Ct. No. 9, Original (40 L.W. 3287). Any departures from the requirements specified in this Order shall be subject to approval pursuant to 30 CFR 250.12 (b).

1. *Maximum Production Rates.*

A. *Producible Wells. Effective May 1, 1972, all producible oil and gas wells and reservoirs may be produced at daily rates not to exceed the Maximum Efficient Rate (MER), subject to the limitations set forth in paragraph 5 below.*

B. *New Completions and Recompletions. New oil and gas well completions and recompletions shall be produced at a rate established by the Supervisor. A testing period not to exceed 30 days will be allowed prior to setting the maximum production rate for the well. At the end of the testing period, the operator shall submit a detailed determination of the MER justifying a proposed maximum rate of production for the Supervisor's approval. The initial production test of all completions and recompletions may be witnessed by a representative of the Supervisor.*

2. *Definition of MER. The MER is defined as that rate for each reservoir and each well which, if exceeded, would lead to avoidable underground waste through loss of ultimate recovery of oil and gas from that reservoir. It is dependent on the recovery mechanism operative for the current producing period, and is based on engineering and geological information.*

3. *Determination of MER. On or before May 1, 1972, each operator shall submit reports, for approval by the Supervisor, showing the operator's estimate of the MER for each oil and gas well and reservoir on those leases in the area removed from dispute in United States v. Louisiana, S. Ct. No. 9, Original, by entry of the Supplemental Decree of December 20, 1971, in that litigation (40 L.W. 3287). Reports shall be identified by the name of the field, the OCS lease number, the well number, and the designation and depth of the productive zone. As soon as available and prior to July 1, 1972, each operator shall submit the technical information and methods used to determine the MER applicable to each well and reservoir.*

Revisions in the operator's estimate of the MER for oil and gas wells and reservoirs located on leases subject to this Interim Order shall be submitted to the Supervisor for approval.

4. *Reports. Each operator shall submit the following reports for each lease separately to the Regional Office. Initial reports for those leases in the area removed from dispute, referred to in Paragraph 3 above, shall be for the month of April 1972 for the reports required in A, C, and D, below, and for the quarter ending April 1, 1972, for the report required in B below.*

A. A monthly well potential report on a form identical to the Louisiana Department of Conservation Form DM-1R. This report shall be submitted for each month by the 10th day of each succeeding month.

B. A gas well deliverability test report on a form identical to the Lcuisiana Department of Conservation Form DT-1, shall be submitted by January 1, April 1, July 1, and October 1.

C. A monthly producer's crude oil and/or condensate report on a form identical to Louisiana Department of Conservation Form R-1. This report shall be submitted for each month by the 25th day of each succeeding month.

D. A monthly producer's natural gas report on a form identical to Louisiana Department of Conservation Form R-5P. This report shall be submitted for each month by the last day of each succeeding month.

5. Limitations on Production.

A. Production rates shall not result in venting or flaring of gas in violation of the Operating Regulations in 30 CFR 250.30.

B. In order to provide safe operating conditions and prevent pollution, oil and gas production rates shall not exceed the operating capacity of production, transportation, and storage facilities, including, but not limited to, separators, dehydrators, compressors, surge tanks, and pipelines. All producing operations shall be in accordance with the provisions of OCS Orders Nos. 5, 7, 8 and 9. Production rates shall be maintained at a level to permit efficient operation of subsurface safety devices.

Robert F. Evans
Supervisor

Approved:

Russell G. Wayland
Chief, Conservation Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF OF MEXICO AREA

NOTICE TO LESSEES AND OPERATORS OF FEDERAL LEASES IN THE OUTER CONTINENTAL SHELF, GULF OF MEXICO AREA

PUBLIC INSPECTION OF RECORDS

This Interim Order is established pursuant to the authority prescribed in 30 CFR 250.11 and in accordance with 30 CFR 250.97 and 43 CFR 2.2. Section 250.97 of 30 CFR provides as follows:

> Public Inspection of Records. Geological and geophysical interpretations, maps, and data required to be submitted under this part shall not be available for public inspection without the consent of the lessee so long as the lease remains in effect or until such time as the supervisor determines that release of such information is required and necessary for the proper development of the field or area.

Section 2.2 of 43 CFR provides in part as follows:

> Determinations as to Availability of Records. (a) Section 552 of Title 5, U.S. Code, as amended by Public Law 90-23 (the act codifying the "Public Information Act") requires that identifiable agency records be made available for inspection. Subsection (b)[1] of section 552 exempts several categories of records from the general requirement but does not require the withholding from inspection of all records which may fall within the categories exempted. Accordingly, no request made of a field office to inspect a record shall be denied unless the head of the office or such higher field authority as the head of the bureau may designate shall determine (1) that the record falls within one or more of

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[1]Subsection (b) of section 552 provides that:
(b) This section does not apply to matters that are--
***
(4) Trade secrets and commercial or financial information obtained from a person and privileged or confidential;
***
(9) Geological and geophysical information and data, including maps, concerning wells.

the categories exempted and (2) either that disclosure is prohibited by statute or Executive Order or that sound grounds exist which require the invocation of the exemption. A request to inspect a record located in the headquarters office or a bureau shall not be denied except on the basis of a similar determination made by the head of the bureau or his designee, and a request made to inspect a record located in a major organizational unit of the Office of the Secretary shall not be denied except on the basis of a similar determination by the head of that unit. Officers and employees of the Department shall be guided by the "Attorney General's Memorandum on the Public Information Section of the Administrative Procedure Act" of June 1967.

(b) An applicant may appeal from a determination that a record is not available for inspection to the Solicitor of the Department of the Interior, who may exercise all of the authority of the Secretary of the Interior in this regard. The Deputy Solicitor may decide such appeals and may exercise all of the authority of the Secretary in this regard.

The operator shall comply with the requirements of this Order. Any departures from the requirements specified in this Order shall be subject to approval pursuant to 30 CFR 250.12(b).

1. Availability of Records Filed on or after December 1, 1970. It has been determined that certain records pertaining to leases and wells in the Outer Continental Shelf and submitted under 30 CFR 250 shall be made available for public inspection, as specified below, in the Area office, Metairie, Louisiana.

A. Form 9-152 - Monthly Report of Operations. All information contained on this form shall be available except the information required in the Remarks column.

B. Form 9-330 - Well Completion or Recompletion Report and Log.
(1) Prior to commencement of production all information contained on this form shall be available except Item 1a, Type of Well; Item 4, Location of Well, At top prod. interval reported below; Item 22, if Multiple Compl., How many; Item 24, Producing Interval; Item 26, Type Electric and Other Logs Run; Item 28, Casing Record; Item 29, Liner Record; Item 30, Tubing Record; Item 31, Perforation Record; Item 32, Acid, Shot, Fracture, Cement Squeeze, etc.; Item 33, Production; Item 37, Summary of Porous Zones; and Item 38, Geologic Markers.

(2) After commencement of production all information shall be available except Item 37, Summary of Porous Zones; and Item 38, Geologic Markers.

(3) If production has not commenced after an elapsed time of five years from the date of filing Form 9-330 as required in 30 CFR 250.38(b), all information contained on this form shall be available except Item 37, Summary of Porous Zones; and Item 38, Geologic Markers. Within 90 days prior to the end of the five-year period the lessee or operator may submit objections to the release of such information. The supervisor, taking into consideration the objections of the lessee, proximity to unleased lands, and the best interests of the United States, may determine that such information shall not be released.

C. Form 9-331 - Sundry Notices and Report on Wells. (1) When used as a "Notice of Intention to" conduct operations, all information contained on this form shall be available except Item 4, Location of Well, At top prod. interval; and Item 17, Describe Proposed or Completed Operations.

(2) When used as a "Subsequent Report of" operations, and after commencement of production, all information contained on this form shall be available except information under Item 17 as to subsurface locations and measured and true vertical depths for all markers and zones not placed on production.

D. Form 9-331C - Application for Permit to Drill, Deepen or Plug Back. All information contained on this form, and location plat attached thereto, shall be available except Item 4, Location of Well, At proposed prod. zone; and Item 23, Proposed Casing and Cementing Program.

E. Sales of Lease Production. Information contained on monthly Geological Survey computer printout showing sales of production of oil, condensate, gas and liquid products, by lease, shall be made available.

2. Filing of Reports. All reports on Forms 9-152, 9-330, 9-331, and 9-331C shall be filed in accordance with the following:

A. All reports submitted on these forms after the effective date of this Order shall be filed in two separate sets. All items on the forms in one set shall be completed in full and such forms, and all attachments thereto, shall not be available for public inspection. The additional set shall be completed in full, except that the items described in 1.(A), (B), (C), and (D) above, and the attachments relating to such items, may be excluded. The words "Public Information" shall be shown on the lower right-hand corner of this set. This additional set shall be made available for public inspection.

B. Copies of reports on these forms which were filed between December 1, 1970, and the effective date of this Order, shall be resubmitted (in duplicate or triplicate, as provided by

the regulations) within 30 days after the effective date of this Order. These reports may exclude the items described in 1. (A), (B), (C), and (D) above, and shall show the words "Public Information" on the lower right-hand corner and shall be made available for public inspection.

3. Availability of Records Filed Prior to December 1, 1970. Information filed prior to December 1, 1970, on the forms referred to in (1) above, is not in a form which can be readily made available for public inspection. Requests for information on these forms shall be submitted to the supervisor in writing and shall be made available in accordance with 43 CFR Part 2.

Robert F. Evans

Robert F. Evans
Supervisor

Approved: August 13, 1971

Russell G. Wayland

Russell G. Wayland
Chief, Conservation Division

ATTACHMENT B

PROPOSED SCHEDULE - PROVISIONAL OCS LEASING

ATTACHMENT A

PROPOSED SCHEDULE - PROVISIONAL OCS LEASING

July 1973

SALES	1973												1974												1975												1976												1977												1978											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
32 Miss., Ala., Fla.	C		ND		T		DES	PH		FES	N	SALE																																																																	
33 Louisiana				C		ND		T		DES	PH		FES	N	SALE																																																															
34 Texas						C		ND		T		DES	PH	FES	N	SALE																																																														
35 So. California								C		ND		T		DES	PH	FES	N	SALE																																																										
36 La. & Texas										C		ND		T		DES	PH	FES	N	SALE																																																					
37 La. & Texas													C		ND		T		DES	PH	FES	N	SALE																																															
38 Gulf of Mexico																		C		ND		T		DES	PH	FES	N	SALE																																						
39 Gulf of Mexico																						C		ND		T		DES	PH	FES	N	SALE																																		
40 Gulf of Mexico																									C		ND		T		DES	PH	FES	N	SALE																																
41 So. California																												C		ND		T		DES	PH	FES	N	SALE																												
42 Gulf of Mexico																															C		ND		T		DES	PH	FES	N	SALE																						
43 Alaska (Lower Cook Inlet)																																		C		ND		T		DES	PH	FES	N	SALE																		
44 Gulf of Mexico																																					C		ND		T		DES	PH	FES	N	SALE																
45 Gulf of Mexico																																									C		ND		T		DES	PH	FES	N	SALE														
46 Alaska (Bering Sea Shelf)																																													C		ND		T		DES	PH	FES	N	SALE												

C = Call for nominations
ND = Nominations Due
T = Announcement of Tracts
DES = Draft Environmental Statement
PH = Public Hearing
FES = Final Environmental Statement
N = Notice of Sale

A decision whether to hold any of the lease sales listed will not be made until completion of all necessary studies of the environmental impact and the holding of public hearings; as a result of the environmental, technical, and economic studies employed in the decision-making process, a decision may, in fact, be made not to hold any sale on this schedule.

If CEQ's study of the environmental impact of oil and gas production on the Atlantic Outer Continental Shelf and in the Gulf of Alaska determines that development in these areas can proceed in an environmentally satisfactory manner, lease sales in one or both areas will be added to this proposed schedule at the earliest practicable time.

The holding of sale 43 is contingent upon the outcome of pending litigation with Alaska regarding jurisdiction over this area.

George L. Turcott
Acting Director
Bureau of Land Management

INT: 149-73

ATTACHMENT 2

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ATTACHMENT C

DESCRIPTION OF BLOCKS BY WATER DEPTH, DISTANCE FROM SHORE, ACREAGE

LIST OF TRACTS PROPOSED FOR LEASING IN SALE #36

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
	West Cameron					
1	22	All 1/	WC/G	4	8	3095 EST.
2	23	All 1/	WC/G	4	8	3324 EST.
3	35	N½;SW¼;N½SE¼; SW¼SE¼	WC/G	6	7	4687.50
4	36	All	WC/G	7	7	5000
5	39	All	DEV/G	6	8	5000
6	42	All	WC/G	7	8	5000
7	43	All	WC/G	7	8	5000
8	44	NE¼;S½NW¼;S½	DEV/G	6	8	4375
9	57	All	WC/G	9	9	5000
10	58	"	WC/G	10	9	5000
11	59	"	WC/G	10	9	5000
12	62	"	WC/G	10	9	5000
13	65	"	WC/G	9	7	5000
14	66	NW¼;S½	DEV/G	9	7	3750
15	69	S½	WC/G	10	11	2500
16	114	All	WC/G	18	10	5000
17	115	"	WC/G	18	10	5000
18	116	"	WC/G	18	10	5000
19	147	"	WC/G	24	12	5000
20	181	W½	DEV/G	30	12	2500
21	204	All	WC/G	35	15	5000
22	205	"	WC/G	34	15	5000
23	237	"	WC/G	40	18	5000
24	238	"	WC/G	41	19	5000
25	248	"	WC/G	45	21	5000
26	249	"	WC/G	44	19	5000
27	252	"	WC/G	46	19	5000
28	253	"	WC/G	47	19	5000
29	282	"	WC/G	61	24	5000
	West Cameron - West Addition					
30	335	All	WC/G	48	19	5000
31	342	"	WC/G	51	19	5000
32	343	"	WC/G	52	19	5000
33	352	"	WC/G	50	21	5000
34	353	"	WC/G	54	21	5000

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
West Cameron - West Addition						
35	364	All	WC/G	57	22	5000
36	365	"	WC/G	57	22	5000
37	367	"	WC/G	59	22	5000
38	368	"	WC/G	59	22	5000
39	401	"	WC/G	69	24	5000
40	402	"	WC/G	69	24	5000
41	413	"	"	71	27	5000
42	414	"	"	71	27	5000
43	426	"	"	73	30	5000
44	427	"	"	73	30	5000
45	428	"	"	73	30	5000
46	441	"	"	77	30	5000
West Cameron - South Addition						
47	450	All	WC/G	78	37	5000
48	452	"	"	79	36	5000
49	453	"	"	79	36	5000
50	458	"	"	74	36	5000
51	459	"	"	74	36	5000
52	483	"	DEV/G	77	38	5000
53	487	"	DEV/G	82	39	5000
54	498	"	WC/G	90	45	5000
55	505	"	"	83	48	5000
56	512	"	"	86	51	5000
57	530	"	DEV/G	88	53	5000
58	536	"	"	91	54	5000
59	549	"	"	98	60	5000
60	553	"	"	95	60	5000
61	554	"	"	93	60	5000
62	609	"	WC/G	111	82	5000
63	628	"	"	114	105	5000
64	645	"	"	117	117	5000
East Cameron						
65	12	All	WC/G	9	11	5000
66	15	All 1/	"	5	9	4650 EST.
67	23	All 1/	DEV/G	5	9	4773 EST.
68	25	All	WC/G	8	11	5000
69	28	"	"	11	12	5000

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
	East Cameron					
70	34	All	WC/G	8	12	5000
71	40	"	"	9	14	5000
72	41	"	DEV/G	11	13	5000
73	42	"	DR/G	12	13	5000
74	225	"	DEV/G	67	30	5000
75	228	"	WC/G	69	36	5000
	East Cameron - South Addition					
76	236	All	WC/G	68	36	3828.56
77	237	"	"	68	36	2500
78	241	"	"	70	36	5000
79	242	"	"	70	36	5000
80	243	"	"	72	36	5000
81	246	"	"	75	39	5000
82	262	"	"	78	42	5000
83	298	"	DEV/G	88	53	5000
	Vermillion					
84	22	All	WC/G	6	11	5000
85	23	"	DEV/G	6	9	5000
86	25	"	WC/G	5	7	5000
87	30	"	"	5	4	4661.38
88	31	"	"	7	4	4633.37
89	40	"	"	10	12	4194.99
90	55	"	"	13	8	5000
91	59	"	"	14	12	5000
92	60	"	"	14	13	5000
93	61	"	"	18	14	4307.19
94	65	"	"	16	10	5000
95	148	"	"	37	22	5000
96	155	"	"	41	24	5000
97	251	"	DR/G	66	39	4489.70
	Vermillion - South Addition					
98	308	All	WC/G	81	60	5000
99	309	"	"	81	60	5000
100	311	"	"	82	60	4273.11

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
Vermillion - South Addition						
101	314	All	WC/G	85	64	5000
102	315	"	"	85	64	5000
103	329	"	"	87	67	5000
104	330	"	"	87	67	5000
105	337	"	"	91	70	5000
106	338	"	"	91	70	5000
107	361	"	"	95	82	5000
108	373	"	"	99	91	5000
South Marsh Island - South Addition						
109	110	All	WC/G	70	48	2851.63
110	111	"	"	73	51	2828.95
111	112	"	"	73	51	5000
112	113	"	DEV/G	74	51	5000
113	123	"	WC/G	76	54	5000
114	124	"	"	76	54	5000
115	125	"	"	76	54	5000
116	127	"	WC/OG	79	57	2783.59
117	129	"	WC/OG	80	57	5000
118	141	"	"	82	60	5000
119	144	"	"	85	67	5000
120	173	"	"	91	82	5000
121	174	"	"	93	82	2670.19
122	175	"	"	96	86	2647.51
123	189	"	"	99	100	5000
124	190	"	"	99	100	2624.83
South Marsh Island - North Addition						
125	253	All 2/	WC/OG	17	6	3305 EST
126	254	All	WC/OG	19	6	3282.51
127	265	"	"	24	6	5000
128	270	"	"	26	9	5000
Eugene Island						
129	10	All 1/	WC/OG	6	5	2303 EST.
130	24	All	"	9	6	5000
131	38	All 1/	"	5	6	4378 EST.
132	58	All 1/	WC/G	4	5	3864 EST.
133	78	All	"	11	7	5000
134	81	"	"	10	6	5000
135	82	"	"	11	7	5000

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
Eugene Island						
136	242	All	WC/G	54	39	5000
137	243	"	"	55	39	5000
138	261	"	WC/OG	55	42	5000
Eugene Island - South Addition						
139	268	All	WC/G	66	54	5000
140	281	"	WC/OG	59	54	5000
141	282	"	WC/OG	59	57	5000
142	288	"	WC/G	66	57	5000
143	289	"	WC/G	67	57	5000
144	304	"	WC/OG	62	64	5000
145	316	"	"	69	67	5000
146	317	"	"	69	70	5000
147	318	"	"	68	73	5000
148	319	"	"	68	73	5000
149	326	"	"	70	76	5000
150	327	"	"	70	76	5000
151	328	"	"	72	73	5000
152	329	"	"	72	73	5000
153	340	"	"	72	82	5000
154	341	"	"	72	82	5000
155	377	"	"	86	92	5000
156	378	"	"	86	91	5000
Ship Shoal						
157	68	All	WC/G	7	7	5000
158	90	"	"	9	6	5000
159	91	"	"	9	6	5000
160	92	"	DEV/G	11	9	5132.22
161	170	"	WC/OG	32	18	5000
Ship Shoal - South Addition						
162	272	All	DEV/OG	60	64	5000
163	276	"	WC/OG	54	64	5000
164	291	N½;SE¼	DEV/OG	57	67	3750
165	350	All	WC/OG	69	109	5000

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
	South Pelto					
166	9	All	WC/G	7	9	5000
167	10	"	"	5	9	5000
	South Timbalier					
168	25	All	WC/OG	9	18	2148.46
169	58	"	"	16	24	5000
170	59	"	"	16	27	5000
171	153	"	"	33	48	5000
172	154	"	"	33	54	2148.46
173	156	"	"	35	48	5000
174	157	"	"	35	45	5000
175	194	"	"	37	33	5000
	South Timbalier - South Addition					
176	317	All	WC/G	66	158	5000
	Grand Isle					
177	56	All	WC/OG	24	43	5000
	Grand Isle - South Addition					
178	87	All	WC/OG	30	91	5000
179	88	"	"	31	73	4539.89
	West Delta					
180	34	All	DR/OG	11	18	1533
181	63	"	WC/OG	15	37	5000
182	78	S½	DR/OG	9	36	2500
183	86	N½	"	7	55	2500
184	87	N½	"	8	58	2500
185	108	All 1/	WC/OG	7	48	4924 EST.
186	109	3/	"	7	55	3500.85
	South Pass					
187	17	4/	DR/O	4	36	1388.04
188	33	All	WC/OG	7	79	4999.96
189	50	"	"	10	182	4999.96
190	57&So. Pass, So. Add.			5	55	
	77	5/	DR/O	7	73	3007.52

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
South Pass						
191	58&So. Pass, So. Add. 78	6/	DR/O	6 7	48 73	2362.33
192	59	7/	"	4	37	2564.19
South Pass - South & East Addition						
193	71	A11	WC/OG	9	109	5000
194	72	A11	"	7	76	5000
Main Pass						
195	28	A11	WC/OG	9	12	4994.55
196	29	"	"	11	13	4994.55
197	59	A11 1/	DEV/OG	11	21	320 EST.
198	73	A11 1/	WC/OG	8	48	4560 EST.
199	98	A11	WC/G	19	18	4994.55
200	115	"	WC/OG	10	13	4994.55
201	128	"	"	18	24	4994.55
202	129	"	"	19	31	4994.55
203	132	"	DEV/OG	24	45	4994.55
204	148	"	WC/OG	8	60	4999.96
205	151	"	"	9	64	4999.96
Main Pass - South & East Addition						
206	160	A11	WC/G	21	37	4994.55
207	161	"	"	19	34	4994.55
208	162	"	"	20	34	4994.55
209	163	"	"	20	37	4994.55
210	236	"	DEV/OG	27	47	4994.55
211	295	"	DEV/O	24	64	4560.81
212	301	"	WC/OG	15	67	4999.96
Garden Banks						
213	N636E097	A11	WC/G	133	210	5760
214	" E098	"	"	132	200	5760
215	" E100	"	"	131	250	5760
216	N637E100	"	"	128	225	5760
217	" E103	"	"	126	250	5760

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
	Garden Banks					
218	N637E105	A11	WC/G	125	250	5760
219	" E106	"	"	125	200	5760
220	" E107	"	"	125	200	5760
221	" E108	"	"	125	200	5760
222	" E121	"	"	118	400	5760
223	" E122	"	"	118	400	5760
224	" E123	"	"	118	400	5760
225	N638E102	"	"	124	210	5760
226	" E103	"	"	123	225	5760
227	" E106	"	"	121	200	5760
228	" E107	"	"	120	200	5760
229	" E108	"	"	120	200	5760
230	" E110	"	"	120	400	5760
231	" E112	"	"	119	350	5760
232	" E113	"	"	119	375	5760
233	" E114	"	"	118	375	5760
234	" E117	"	"	118	200	5760
235	" E118	"	"	117	200	5760
236	" E119	"	"	118	300	5760
237	" E121	"	"	118	400	5760
238	" E122	"	"	117	400	5760
239	" E123	"	"	117	300	5760
240	N639E102	"	"	120	200	5760
241	" E103	"	"	120	200	5760
242	" E106	"	"	119	180	5760
243	" E107	"	"	119	200	5760
244	" E112	"	"	118	250	5760
245	" E113	"	"	117	250	5760
	New Orleans South No. 1					
246	N637E127	A11	WC/G	106	400	5760
247	" E128	"	"	105	400	5760
248	" E129	"	"	105	400	5760
249	N638E127	"	"	104	325	5760
250	" E128	"	"	103	325	5760
251	"E129	"	"	104	325	5760

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
	New Orleans					
252	N645E160	A11	WC/G	66	200	5760
253	" E161	"	"	66	250	5760
254	N646E160	"	"	67	170	3730.68
255	" E161	"	"	69	200	3982.36
256	N647E160	"	"	72	140	612.36
257	" E161	"	"	72	160	761.57
	Mobile South No. 2					
258	N652E046	A11	WC/OG	52	225	5760
259	" E047	"	"	53	310	5760
260	N653E046	"	"	49	400	5760
261	" E047	"	"	50	400	5760
262	N655E046	"	"	43	425	5760
263	" E047	"	"	45	500	5760
264	" E049	"	WC/O	33	500	5760
265	" E050	"	"	31	500	5760
266	" E052	"	WC/OG	38	400	5760
267	" E053	"	"	37	400	5760
268	" E055	"	"	31	300	5760
269	" E056	"	"	30	250	5760
270	" E057	"	"	30	275	5760
271	N656E046	"	WC/O	36	400	5760
272	" E047	"	"	35	500	5760
273	" E049	"	DEV/O	31	200	3811.18
274	" E050	"	WC/OG	33	200	2318.09
275	" E052	"	"	28	180	5003.05
276	" E053	"	"	28	160	5760
277	" E055	"	"	27	180	3469.92
278	" E056	"	WC/O	24	180	4298.45
279	" E057	"	WC/OG	27	180	5760
280	N657E047	"	WC/O	31	400	5760
281	" E048	"	"	30	200	5760
282	" E052	"	WC/OG	26	120	1159.47
283	" E053	"	WC/OG	26	120	1291.95
284	N658E047	"	WC/O	31	200	2178.08
285	" E048	"	"	28	150	1965.79
286	N662E067	"	WC/OG	18	400	5760
287	" E068	"	"	21	500	5760
288	" E069	"	"	24	500	5760
289	N663E067	"	"	17	300	5760

Tract	Block	Area	Type Res.	Distance From Shore (Statute Miles)	Water Depth (Meters)	Acreage
	Mobile South No. 2					
290	N663E068	All	WC/OG	20	350	5760
291	" E069	"	"	24	350	5760
292	N664E067	"	"	16	200	5760
293	" E068	"	"	18	250	5760
294	" E069	"	"	22	300	5760
	Mobile South No. 1					
295	N666E070	All	WC/OG	20	200	5760

1/ That portion located seaward of the Third Supplemental Decree Line.

2/ That portion located more than three marine leagues seaward of a line extending from a point on Shell Keys at latitude 29°24'32.15"N., longitude 91°51'16.59" W. (x = 1,834,019, y = 270,301), northwesterly in a straight line to Tigre Point at latitude 29°32'23.13" N., longitude 92°14'57.15" W. (x = 1,708,756, y = 318,661). The coordinates used refer to the Louisiana Plan Coordinate System, South Zone.

3/ That portion of Block 109 more than one foot seaward of the Third Supplemental Decree Line /404 U.S. 388 (Dec. 20, 1971)/.

4/ That portion of Block 17 seaward of the Fourth Supplemental Decree Line /409 U.S. 17 (Oct. 16, 1972)/.

5/ That portion of Block 57 between the line one foot seaward of the Third Supplemental Decree Line /404 U.S. 388 (Dec. 20, 1971)/, and the line three geographical miles seaward of the First Supplemental Decree Line /382 U.S. 288 (Dec. 13, 1965)/ and that portion of Block 77 less than three geographical miles seaward of the First Supplemental Decree Line /382 U.S. 288 (Dec. 13, 1965)/

6/ Those portions of Blocks 58 and 78 between the line one foot seaward of the Third Supplemental Decree Line /404 U.S. 388 (Dec. 20, 1971)/ and the line three geographical miles seaward of the First Supplemental Decree Line /382 U.S. 288 (Dec. 13, 1965)/.

7/ That portion of Block 59 between the Fourth Supplemental Decree Line /409 U.S. 17 (Oct. 16, 1972)/ and a line three geographical miles seaward from the First Supplemental Decree Line /382 U.S. 288 (Dec.13, 1965)/.

ATTACHMENT D

REPORT OF THE

WORK GROUP ON OCS SAFETY AND POLLUTION CONTROL

U. S. Geological Survey

Members:

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May 1973

Abbreviations Used In The Report

AEC - Atomic Energy Commission

ANSI - American National Standards Institute

API - American Petroleum Institute

ASME - American Society of Mechanical Engineers

ASTM - American Society for Testing and Materials

EPA - Environmental Protection Agency

FAA - Federal Aviation Agency

LMS - Lease Management Study (conducted by a team of systems analysts from the U.S. Geological Survey)

NAE - National Academy of Engineering (specifically a panel of the Marine Board who conducted a study of OCS safety)

NASA - National Aeronautics and Space Administration (specifically the team of NASA analysts who conducted a study of OCS operations)

NOAA - National Oceanic and Atmospheric Administration

OCS - Outer Continental Shelf

OOC - Offshore Operators Committee (Gulf of Mexico)

USCG - United States Coast Guard

USGS - United States Geological Survey

WOGA - Western Oil and Gas Association

Foreword

The Director, U.S. Geological Survey (USGS) appointed a Work Group to review the findings of three studies conducted at the request of the USGS on improving safety and pollution control in the management of Outer Continental Shelf oil and gas operations, and to recommend appropriate implementation actions. The studies are identified in the Appendix.

This report is not only responsive to the specific recommendations of the studies, but also reflects findings from meetings with personnel from the American Petroleum Institute, the Offshore Operators Committee, the Western Oil and Gas Association, a panel of the Marine Board, National Academy of Engineering, NASA, Occupational Safety and Health Administration, the Department's Office of the Solicitor, and others.

Several actions have already been taken where an immediate response was considered necessary or desirable. For example:

- Contracts studies have been made to determine requirements for implementation of systems analysis reviews.

- The Marine Board, National Academy of Engineering, has agreed to establish a Review Committee on Safety of OCS Petroleum Operations.

- Action was initiated to expand OCS Accident Investigation Procedures to include an immediate notification, after the occurrence of an accident, to all OCS lessees and operators of potentially hazardous situations (Safety Alert).

- The Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and the U.S. Coast Guard have been requested to participate in the implementation of appropriate recommendations of the NAE study.

- Opinions have been obtained from the Department of Justice and the Office of the Solicitor on the legal aspects of certain implementation actions.

- Arrangements were made for API cooperation in the implementation of those recommendations calling for its participation.

- Safety committees have been established in the Offshore Operators Committee and the Western Oil and Gas Association.

Similarly, the Conservation Division of the U.S. Geological Survey, which has the regulatory responsibility for OCS activities, has already responded to various recommendations as a result of direct discussions the Work Group has had with them during the course of the study. For example, inspection procedures developed in the Lease Management Study have been implemented.

The report is organized in sections by subject. Each section contains the related recommendations from the three study reports, some remarks, the Work Group's recommendation, and finally the implementation action required.

RECOMMENDATIONS OF STUDIES

NASA--*It is therefore recommended that USGS lay the groundwork for the type of activity, described above* (a closed-loop, failure reporting and corrective-action program), *in the drilling and production phase of the oil industry by requiring monthly summaries from each operator of failure causes and corrective action taken for all safety equipment specified by OCS Orders. All accidents and oil spills should follow similar procedures. For the procedure to be effective, its object should be recurrence prevention, with emphasis placed on the determination of causes, preventive action, and follow-up.*

This recommendation, if adopted, will have a significant impact, primarily due to the change in policy made necessary by the majority of offshore operators. The statement is often made by offshore people that "the only real test of equipment is to place it in service in the Gulf".

Whether this is a valid assumption or not, the data from this "test" should be utilized to maximum advantage. The basic philosophy to be followed is that every failure has a cause, every cause can be understood, and every failure can be corrected or alternate procedures provided.

REMARKS

In order to promote technological improvements in equipment necessary for safe offshore operations, and to reduce the occurrence of equipment malfunctioning, all operators should develop a systematized method for failure identification. In many cases, malfunctioning equipment has been replaced or repaired with little or no attempt made to determine the reason for failure. Consequently, a piece of equipment with an inherent failure problem might continue to be used and replaced for a period of time before the reason for continual failure is discovered. In conjunction with an analysis of failures, a corrective action program is necessary to guard against a recurrence of the same type of failure. Implementation of NASA's recommendation would tend to encourage operators to work more closely with their suppliers to determine and remedy causes of equipment failures. Analysis of accidents and oil spills would help to identify items for closer inspection and to determine patterns of equipment failure.

OCS Order No. 5, revised effective June 5, 1972, requires a quarterly failure analysis report for subsurface safety devices. Initial experience with this system should indicate the most favorable manner in which to proceed with failure reporting on other equipment.

WORK GROUP RECOMMENDATION NO. 1

It is recommended that the USGS require all operators to establish an internal failure-reporting, corrective-action program, to include: 1) an operator's report to the USGS on incidents, problems, and failures which result in fires or reportable oil spills or reportable accidents; 2) the factual circumstances surrounding the incident; and 3) the corrective actions taken. The operator's report to the USGS should be required on a scheduled basis. Data from the reports should be computerized to facilitate analyses and corrective actions. Implementation of this recommendation should not preclude compliance with the existing requirements for immediate reporting of serious accidents, all fires, and spills as specified in 30 CFR 250.43 and 250.45, and pertinent OCS Orders.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should determine the requirements for reporting and include them in OCS Orders. For those cases where the OCS Orders cannot be issued within a reasonable period of time, notices, as appropriate, should be issued to all operators.

2. ACCIDENT INVESTIGATION AND REPORTING

RECOMMENDATIONS OF STUDIES

NAE --*The official reports stemming from investigation of major accidents should receive prompt and full public disclosure, and should be available in a readily accessible form.*

The U. S. Government should directly sponsor, encourage, and provide the means for a public exchange of information on the causes and effects of accidents, and on the performance of specific items of safety-related equipment in the offshore industry.

A careful analysis should be carried out after every major offshore oil spill to determine the precise manner in which the spill occurred -- taking into account any equipment failures, personnel errors, or design inadequacies, their causes and what can be done to prevent such future occurrences.

The information resulting from accident investigation and evaluation of component performance should be analyzed by a competent organization (similar to the National Transportation Safety Board or the Marine Safety Council), and its conclusions should be made public promptly.

REMARKS

The Conservation Division established, on April 12, 1971, a procedure for "Notification and Investigation of Accidents". This procedure is designed to provide prompt investigation and systematic review of accidents as a basis for taking immediate corrective actions to limit the probability of recurrence. No provision is made, however, for public disclosure of findings such as is practiced by the U.S. Coast Guard and the Federal Aviation Agency. Publication of accident investigation results is desirable to develop public confidence in, and acceptance of, petroleum operations offshore.

The Assistant Solicitor in his memorandum of January 10, 1973, to the USGS stated that, "...there does not seem to be any legal objection to the publication of such reports. However, it is necessary to be careful about the content of the report published. For example, any proprietary information should be deleted before publication. Moreover, the report should be limited to factual statements and should not include judgments on the conduct of companies or personnel. The Geological Survey should consult the Solicitor's Office before publishing any reports".

WORK GROUP RECOMMENDATION NO. 2

The Work Group agrees with all four recommendations of the NAE Study, i.e.:

a. Reports of major accidents stemming from the current USGS procedure for investigation of accidents should be made available to the public promptly.

b. Work Group Recommendation No. 3, calling for a system for disseminating information concerning equipment failures and accidents, should include a means for the public to have access to the information.

c. Analyses of causes of major oil spills should be made as part of the accident investigation procedure and, if required, by additional follow-up studies. Results of all such analyses should be provided to the Review Committee (see Work Group Recommendation No. 15).

d. Results of accident investigations, in addition to being made available to the public, should be provided to the Review Committee for possible further analyses.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should begin immediately to implement the above recommendations. They will need to determine the format and means of disseminating reports to the public and consult with the Solicitor's Office prior to release.

Referral of appropriate items to the Review Committee should be done by the Director, USGS.

3. INFORMATION EXCHANGE

RECOMMENDATIONS OF STUDIES

NASA--*It is recommended that the USGS investigate the legal question of a possible anti-trust law violation regarding formal exchange of hardware and method problem information within the oil and gas industry. If a favorable ruling is obtained, USGS should encourage and participate in the development and operation of the system.*

As an alternative, USGS could become the focal point for this information and disseminate it to all concerned parties.

NAE --*In addition to, and separate from the inspection procedures, there should be a government-sponsored system of reporting safety-related information for the purpose of improving the safety of offshore operations and the inspection system by additions and eliminations. This system, in order to be effective, must take into consideration and allow for the problems of self-incrimination.*

REMARKS

To utilize fully the information gathered through a failure and accident reporting and corrective action program, it will be necessary to disseminate such information throughout the offshore petroleum industry. NASA has noted that it has been successful in providing a rapid exchange of information in the space program which has been one of the keys to its success. The Atomic Energy Commission also employs procedures to notify all AEC installations of accidents, their causes, and remedial actions to prevent recurrences.

WORK GROUP RECOMMENDATION NO. 3

The USGS should establish and operate a system for disseminating information concerning equipment failures and accidents, utilizing data obtained through a failure and accident reporting and corrective action program, operator reports, and investigations conducted by the USGS. Such information should be made readily available to the public.

A system should also be established for immediate notification to all operator of a potential failure or accident as a result of specific incidents, prior to a full investigation and final dissemination of information.

IMPLEMENTATION ACTION REQUIRED

In view of the mass of data to be handled, and the intricacies of a system for evaluating, cataloging, and dissemination of information, the USGS should contract for the design by data-bank specialists. Due consideration should be given to the possible adaptation to USGS needs of dissemination systems used by other agencies such as NASA, AEC, FAA, and others.

A "Safety Alert" system for immediate notification to all operators of failures and accidents has already been implemented.

RECOMMENDATIONS OF STUDIES

NASA--*It is recommended that USGS establish a method to determine needs and conduct or direct the research, testing and development necessary to improve equipment and methods for an increasingly safe and pollution-free operation on the OCS.*

An alternate recommendation is that USGS work with the industry in establishing an organization such as the American Petroleum Institute (API) to serve as the R&D focal point, with all companies contributing toward resolution of problems.

NAE --*The U. S. Government should encourage and utilize industry research and development programs by means of promotion of industry consensus standards on offshore technology so that it can act to ensure that information on improvements in safety technologies becomes available to participants in offshore resource development.*

The U. S. Government should sponsor a coordinated program to specify reasonable limits of crude oil intrusion in accordance with biological and aesthetic standards. These standards should be set in a manner that will take full account of site variables. The effort should be carried out on a continuing basis in order to take advantage of improvements in the technology of offshore petroleum operations. The program should be specifically directed to provide a basis for engineering design and standards for components and systems to be used in offshore petroleum operations.

The U. S. Government should make quantitative studies of the effectiveness of the various present and potential methods of cleaning up oil from the marine environment, and of their potential marine environmental impact.

The U. S. Government should actively encourage and sponsor the development and testing of damage-limiting and fail-safe systems and techniques in the areas of damage control, fire-fighting, and well control.

REMARKS

Considerable research has been conducted by various segments of the petroleum industry and by certain governmental agencies in matters related to offshore

drilling and producing operations. In the past, however, development of additional safety controls by the industry often resulted only as a side effect from the main thrust of its research efforts. NASA has noted that individual companies have R&D programs devoted primarily to improving production capability with some effort to improve safety and anti-pollution equipment and methods included.

The Solicitor's Office has advised that there is legal authority to enter contracts for scientific or technological research into any aspect of problems related to Interior Department programs (42 USC § 1900), but there is no authority to require OCS operators to conduct R&D. They further advise that a joint Government-Industry R&D program would be a possibility, but would be more complex than a program operated by the USGS alone.

WORK GROUP RECOMMENDATION NO. 4

a. The USGS, in cooperation with the API, should establish a program to encourage and promote research and development in safety and anti-pollution equipment and systems. Current and completed research and development should be taken into account in the determination of specific needs. Such needs should be communicated to industry through API. For those needs where there is no response from industry, or the response is unsatisfactory, the USGS should contract for the required work. (See also Recommendation No. 8a.)

b. With specific reference to the NAE recommendations, the Work Group recommends:

(1) The promotion of industry consensus standards should be effected through a cooperative arrangement with API (see Work Group Recommendation No. 5).

(2) Requests should be made to NOAA, USCG, and EPA to sponsor programs to study the effects of various amounts of crude oil intrusion into the marine environment, taking into account site variables.

(3) The recommendation to undertake quantitative studies of the effectiveness of methods for cleaning up oil from the marine environment should be referred to the U. S. Coast Guard.

(4) The development and testing of damage-limiting and fail-safe systems in the area of damage control, fire-fighting, and well control should be an item for follow-up under the cooperative arrangement with API.

IMPLEMENTATION ACTION REQUIRED

Arrangements have been made with API for the recommended cooperative effort and the desired programs are underway with personnel from the Conservation Division participating.

EPA, NOAA, and the USCG have been requested to respond to the NAE recommendations. Their replies were favorable and pointed out the various pertinent activities in which they are already engaged.

5. STANDARDS AND SPECIFICATIONS

RECOMMENDATIONS OF STUDIES

NASA--*That USGS seek API cooperation in establishing a committee to function under USGS guidance for the purpose of determining specific needs, and to write, review and approve standards/specifications for safety and anti-pollution equipment. The committee must function under the guidance of USGS.*

That specifications developed by the committee contain requirements for a basic quality control system and, where equipment is to be used in a deleterious environment, an environmental test program. The committee should use, as a quality system guideline, the quality control provisions of the Bureau of Mines specification covering fuses for trailing cables used in coal mines, and in NASA Publication NPC 200-3, "Inspection System Provisions for Suppliers of Space Materials, Parts, Components and Services".

That the USGS, through OCS Orders, require the use of apprcved standards/specifications.

As an alternate recommendation, if the USGS cannot obtain API participation, it is recommended that USGS establish a committee, comprised of appropriate members from the industry, for the purpose of developing these standards/specifications for equipment and methods used in OCS operations.

NAE --*The U.S. Government should encourage and support the development of a comprehensive system of industry consensus standards and should make use of the resulting standards system in the regulation and inspection of the offshore industry, and make adherence to such standards a consideration in the issuance of permits.*

The American National Standards Institute (ANSI) should be used jointly by government and industry to integrate the efforts of government, industry, and the professional societies for the development of industry consensus standards for personnel, equipment, and operating procedures.

U. S. Government personnel associated with offshore resource development should participate in the standards preparation procedures and there should be means of assuring that such government personnel can participate as equals.

Industry and the U. S. Government should establish a working relationship for the joint development of standards for advanced deep water technology. Industry consensus standards for completion and workover safety procedures should be developed. Special consideration should be given hazard control and damage limiting methods.

The U. S. Government should develop a policy regarding the testing of offshore equipment, including the establishment of criteria for selection of test sites for such equipment in the marine environment.

REMARKS

NASA has noted the need for the development of new and more meaningful standards. It was also noted that many standards had been written in too general terms, insufficient to adequately describe a specific situation. Although equipment quality is of the utmost concern to oil operators, no requirements have been placed on manufacturers for a quality control system. Organizations already in existence, such as the American National Standards Institute, American Petroleum Institute, American Society for Testing Materials, American Society of Mechanical Engineers, etc., are best qualified to develop the necessary standards.

WORK GROUP RECOMMENDATION NO. 5

The USGS, in cooperation with API, should identify needs for additional or more specific standards for safety and anti-pollution equipment. The standards should include performance requirements for the operational testing of the equipment in the marine environment. Arrangements should be made with ANSI for the development of needed standards. API, ASTM, ASME, and other organizations should be requested to prepare proposed standards as appropriate, with USGS participation. Standards adopted by the USGS should be published and incorporated in OCS Orders. (See also Work Group Recommendation No. 4.)

IMPLEMENTATION ACTION REQUIRED

Arrangements have been made with API for its cooperation. The program is underway with participation by personnel of the Conservation Division.

6. SYSTEMS ANALYSIS[1/]

RECOMMENDATIONS OF STUDIES

NASA--1. *The team recommends that USGS request identification of operations and equipment critical to safety of personnel and pollution prevention. Data to complete this "Critical Items List" could be derived from two sources. One, from compilation of accident history and problem/failure reports, is the topic of another recommendation. The second source could result from analysis of the systems utilized to perform a given function. Two types of design/system analysis most commonly used in industry today are the Failure Mode, Effect Analysis (FMEA) and the Hazard Analysis (HA).*

2. *The USGS Gulf Coast Regional Office should be authorized to implement the proposed "design review" group.*

3. *The region should require submission from offshore operators a list of critical operations to be performed during drilling at time of permit request. List of critical systems should also be obtained at the time of well completion, and appropriate reviews conducted with the operator.*

4. *The requirement for submission of complete Hazard Analysis should be phased into system starting with new work, with time limits on existing wells.*

5. *The analysis group should work with operators to eliminate (reduce) hazardous operations by recommending redesign of hardware or operations.*

6. *Inspection criteria should be revised to include any additional critical equipment identified by Hazard Analysis.*

LMS --1. *Systematic procedures should be established to identify potential hazards associated with various OCS operations and provide risk assessments.*

2. *Design specifications for a safety program to be implemented by industry as a means of further reducing risk of accidents and losses on the OCS. The specifications should emphasize (1) the early identification of hazards, preferably in the*

1/ "Hazards Analysis" is the term used in the NASA report. "Systems Analysis" is substituted herein because it is broader and more descriptive of what actually is desired in the Work Group's recommendation.

design or planning stage of an operation and (2) the explicit statement of assumed risks and losses associated with the operation. Such statements and hazard analyses should eventually be part of applications for new platforms and associated production equipment. As part of the first phase of the safety program, each operator should be required to submit a general safety plan following Survey-defined specifications.

REMARKS

In order to evaluate Hazards Analysis and Failure Mode and Effects Analysis procedures more fully, the USGS contracted for such analyses of actual offshore drilling and producing operations. Two separate contracts were completed, one by the General Electric Corporation and the other with the Southwest Research Institute. The results are now being studied.

WORK GROUP RECOMMENDATION NO. 6

The USGS should require lessees to submit a systems analysis prior to granting approval for platforms, pipelines, drilling operations, and production operations. Operators should provide with each analysis, an identification of operations and equipment critical to safety of personnel and pollution prevention. The latter information should be incorporated into a "Critical Items List". A phased program requiring systems analysis on existing platforms and pipelines should also be developed.

IMPLEMENTATION ACTION REQUIRED

Implementation of the recommendation will require study of the findings of the recently completed contracts for hazards analysis. Assuming satisfactory results, the requirements for systems analysis should be incorporated in OCS Orders and the necessary staffing for review of analyses should be developed by the Conservation Division. The reorganization of the Conservation Division provides for an operational unit to accomplish this work.

7. ENGINEERING DOCUMENTATION

RECOMMENDATIONS OF STUDIES

NASA--*It is recommended that USGS require that certain minimum engineering documentation be available at the operator's lowest level onshore engineering office. This recommendation is made in pursuit of the preceding recommendation and others contained in this report, as well as the USGS stated objectives of reviewing process equipment designs more closely. The following list is recommended as minimum requirements:*

1. *Structural layout and details.*
2. *Piping runs.*
3. *Schematic diagrams (mechanical and electrical).*
4. *Engineering parts list (complete to valve and power supply level, including part number, name and manufacturer).*
5. *Specifications for all actively functioning components.*

REMARKS

The engineering documentation of some platform systems is incomplete, and where such documentation exists, it is not always readily available to operating personnel. The availability of complete documentation at the working level is essential for immediate analysis of problems or malfunctions that could lead to accidents.

WORK GROUP RECOMMENDATION NO. 7

OCS Orders should include requirements for certain minimum engineering documentation such as wiring diagrams, structural layouts, piping layouts, etc., to be readily available at the operator's lowest level onshore engineering office, with copies to the USGS. A Conservation Division task force should identify which documentation is required.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should organize a task force to identify the required documentation, consult with operator groups to determine that particular items can be provided meaningfully, and include appropriate requirements in OCS Orders.

8. WEAROUT PREVENTION

RECOMMENDATIONS OF STUDIES

NASA--1. *Development of a reliable sand erosion probe under USGS sponsorship (including a specification).*

2. *USGS revision of OCS No. 8 specifying method of implementation of sand erosion probe.*

3. *Requirement for rigorous test and inspection (X-Ray/sonic) of wells upon sand detection.*

At a later date, when data on failed equipment are available, an evaluation of the necessary inspection frequency and/or periodic replacement of selected safety equipment should be undertaken.

REMARKS

Sand erosion is a major cause of failure of safety equipment on wells producing sand. Although some research toward development of reliable sand erosion detectors is underway, this effort shcuild be accelerated.

WORK GROUP RECOMMENDATION NO. 8

a. Include the development of a reliable sand erosion detector in the research and development program (see Recommendation No. 4).

b. Develop rigorous test and inspection procedures for detection and control of sand erosion (see Recommendation No. 12).

c. Using data from a failure reporting and corrective action system and other sources, specify the requirements for the frequency of inspection and the frequency of replacement for equipment susceptible to failure, and include them in OCS Orders.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should incorporate the requirement of Recommendation No. 8a in the Research and Development program, and those of Recommendation No. 8b and No. 8c in its Inspection Procedures program. OCS Orders should be revised accordingly.

9. TRAINING AND CERTIFICATION

RECOMMENDATIONS OF STUDIES

NASA--*It is recommended that USGS require, through revision or addition of OCS Orders, that:*

1. *Operators develop methods to ensure that company or contract personnel performing inspection and test of safety or anti-pollution equipment are properly trained in USGS requirements, the equipment functions, test methods, etc., prior to performing these services and that training is periodically updated as equipment is modified or new types of equipment are utilized. Operator or outside-source certification of personnel following demonstration of skill should be required.*

2. *Operators provide USGS with a description of the methods to be employed in accomplishing the above, and that these methods be approved in advance by USGS.*

NAE --*Since operator training programs are essential to safety in offshore resource development, the U. S. Government should:*

Actively encourage and support such training programs; including the objective of safe and reliable operation, installation, maintenance, and repair of equipment systems and components;

Sponsor industry-government standardization of training criteria;

Give weighted consideration to the existence and quality of job qualification requirements and corresponding personnel training in permit procedures;

Ensure the participation of U. S. Government personnel involved in standard setting, regulation and inspection or permit procedures in such training programs.

REMARKS

A considerable amount of vocational training and some safety training is already accomplished under the auspices of the Committee on Vocational Training of the Division of Production of API through courses given in various colleges and universities in the Gulf Coast area. The International Association of Drilling Contractors also trains drilling personnel, and a considerable amount of training is accomplished by the individual companies.

A Solicitor's opinion on legal authority for the USGS to require operators by regulation or OCS Order to develop and submit for approval programs for the training and certification of company personnel was answered on April 27, 1972, as follows: "In order to implement such a program, it is our opinion that Geological Survey must first set standards to be met by the companies for training and certification of personnel in safety and pollution control. Any course of study or training program sufficient to meet these standards should then be approved by Geological Survey. Companies should be free to establish their own training programs or send their personnel to an approved course".

WORK GROUP RECOMMENDATION NO. 9

a. The USGS, working with industry through API, should set standards and requirements for training of personnel, to include, but not be limited to, the following:

(1) A requirement for minimum training in safety and pollution prevention and control for all company and contractor personnel, including identification and proper use of safety equipment, emergency procedures, and first aid.

(2) A requirement that appropriate company and contractor field personnel be briefed on USGS regulations and orders.

Standards and requirements for such training should be specified in OCS Orders and a certification of compliance should become a prerequisite for certain permits and operational work. Appropriate credit should be given for pertinent experience.

b. USGS field supervisory personnel and inspectors should be required to participate in training courses appropriate to their responsibilities.

IMPLEMENTATION ACTION REQUIRED

Arrangement have been made with API for a joint effort to develop the necessary standards and specifications for training of industry personnel. The Conservation Division should pursue this effort and revise OCS Orders accordingly.

Requirements for appropriate training of USGS personnel should be included in the Division Manual.

The Conservation Division should arrange for briefing programs on USGS regulations and orders.

RECOMMENDATIONS OF STUDIES

NASA--*It is recommended that USGS initiate an OCS-wide safety and anti-pollution motivation program. Such a program could be effective in terms of obtaining industry response and favorable publicity.*

A program consisting of at least the following elements is suggested.

1. *Visual aid package consisting of dramatic evidence of the results of carelessness and human error (pictures of platform fires, etc.) accompanied by analysis of typical events leading to accidents and pollution.*

2. *Periodic review of accident (safety and pollution) records, from available statistics, with appropriate awards for top performance. The awards should be public ceremonies with maximum possible publicity.*

The government program could be put together by an outside company specializing in the field, but should be conducted by USGS.

Additional elements recommended to be implemented by offshore operating companies, with some USGS participation, are:

Safety training for all field personnel to include identification and proper use of all safety equipment. Review of all emergency procedures with periodic drills. Instructions concerning daily operations to avoid pollution and minimize hazards.

Periodic review of accident and pollution history to field employee level with recognition for good performance. Recognition would assist in obtaining cooperation for better reports of incidents.

Employee suggestion program regarding safety improvements for both equipment and operations. Again, a recognition system is recommended for accepted suggestions.

REMARKS

The Work Group feels that safety and anti-pollution motivation programs would be more effective if sponsored by industry, albeit the USGS should encourage such programs and participate as appropriate.

WORK GROUP RECOMMENDATION NO. 10

The USGS should ask API to take the lead in promoting safety and anti-pollution motivation programs for all personnel involved in offshore operations. API should be encouraged to obtain descriptions of the various motivation ideas and programs now practiced by several companies and publish the best in a brochure for others to consider for adoption.

IMPLEMENTATION ACTION REQUIRED

Arrangements have been made with API to assume leadership in motivation programs, encourage such programs throughout industry, and participate where appropriate. The Conservation Division should assist API in this effort.

11. LEASE MANAGEMENT PROGRAM

RECOMMENDATIONS OF STUDIES

NASA--*It is recommended that USGS regional office extend the current effort by staffing, at the earliest possible time, with personnel experienced in quality management and capable of developing, documenting and assisting the Regional Supervisor in implementing this type program. As a minimum, this program should contain the following information:*

1. *An organization chart*
2. *Functional statement for each section, district and unit*
3. *List of reports required of each section, district, and unit*
4. *Personnel training records*
5. *Detailed procedures outlining the functions to be performed by USGS personnel at both the district and regional levels*
6. *Assignment and frequency of inspection functions*
7. *List depicting areas to be controlled in performing inspection functions*
8. *Guideline procedures covering inspection and/or tests to be witnessed by USGS district personnel*
9. *Waiver/departure procedure*

It is recommended that NASA documents NPC 200-1A, "Quality Assurance Provisions for Government Agencies", and NHB 5330.7, "Management of Government Quality Assurance Functions for Supplier Operations", be used as guidelines.

USGS should require that all data generated from this planned quality effort be assembled at the regional and Washington offices to be analyzed and evaluated to determine the effectiveness of the district operations.

LMS --*The major elements of the OCS Lease Management Program, the Production Program and the Revenue Program need to be coordinated and directed to avoid conflicts over available resources.*

1. *Designate an OCS Lease Management Program Coordinator.*

2. *The Survey should hold a formal annual review of the performance of the program components.*

3. *Survey management should delineate specific operational policies for both programs.*

4. *The Survey should encourage personnel, especially field technicians, to participate in industry training programs.*

5. *A paperwork management study should be conducted in order to streamline procedures for processing documents related to oil and gas operations.*

6. *All routine procedures, decision rules, policies, and operating criteria pertaining to OCS operations should be documented in a set of Branch of Oil and Gas Operations' Manuals.*

REMARKS

Staffing for quality control management capability as recommended by NASA should be provided. These functions can and should be performed by the Operations Analysis Unit in the Conservation Division's Metairie Office when it is adequately staffed. This Unit as presently constituted includes groups with accident investigation, design review, orders and field rules, and pollution control functions.

The activities at the field level involved in the OCS lease management program are so diversified and time consuming that adequate means of coordinating them is essential. These functions, however, are the assigned responsibility of the Manager, the Supervisor, his Deputy, and the heads of the Sections, Units, and Groups now existing within the organizational structure. The Supervisor and his Deputy have the direct overall responsibility for coordination of the entire program and under a proper line-staff organizational structure it would not be

appropriate to delegate this responsibility to a "Program Coordinator". Additionally, the coordination of all activities should improve when the positions under the Conservation Division reorganization plan are filled and fully operational. However, if assistance in coordinating program activities is needed, such assistance should be added to the staff.

Also, the Division's reorganization plan, when fully implemented, should provide adequate coordination of the Lease Management Program at the Division headquarters level.

WORK GROUP RECOMMENDATION NO. 11

a. The NASA recommendations listed above should be implemented to provide the needed quality management capability. Most of the items given as a minimum for the program plan are in existence, but they need to be reviewed, updated, consolidated, and systematically documented.

b. The LMS recommendations listed above should also be implemented, with the exception of item 1. Instead of an OCS Lease Management Program Coordinator, necessary staff capability should be added for program coordination.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should add personnel to implement these recommendations.

The Director's Office should develop the guidelines for a formal annual review and prepare the recommended operational policies.

A contract will probably be required for the paperwork management study.

The recommended operations manuals should be developed by the Conservation Division as soon as possible.

RECOMMENDATIONS OF STUDIES

NASA--a. The data processing equipment, that the team (LMS study team) was advised is being considered for location in the Regional Office, should be installed at the earliest possible time.

b. The presently used Potential Incidence of Non-Compliance (PINC) list should be modified to separate the gathering of descriptive information (e.g., number of wells/platforms) from compliance information (e.g., satisfactory operation of check valves).

c. A method should be established to ensure that compliance characteristics of the PINC list are maintained current as OCS Orders are revised or added.

d. Conservation Division should devise a "best method" of adapting study techniques to the needs of Region operations. An operating procedure should then be developed, and implemented as soon as possible, in order to provide uniform guidance to all concerned personnel. The procedure should include the use to be made of information generated by District, Region, and Headquarters.

e. The procedures referenced above should be integrated into the overall OCS Management Program Plan.

LMS --1. Adopt the inspection techniques and methodology developed and utilized in the course of this study.

2. Expand the scope of the inspections to include other production operations as they are specified in conjunction with the hazard review activity and as new OCS Orders are written.

3. Continue the review and analysis of inspection results in order--

a. to modify inspection strategies and to allocate resources in response to changes in the level of company activity and compliance;

b. *to advise the Offshore Operators Subcommittee on Safety of the inspection results.*

4. *Augment the existing enforcement authority with the addition of required fixed periods of shut-in time for specific items of noncompliance or combinations of items.*

5. *On a periodic basis, perhaps monthly, inform upper management of actions taken against their company.*

NAE --*Routine inspection procedures in the offshore industry should be carried out by the specific companies involved for compliance with industry consenus standards. U. S. Government inspections should be confined to spot-checking to ascertain compliance to regulations.*

REMARKS

USGS inspection procedures have been criticized for lack of uniformity among inspectors in the interpretation and application of OCS Orders. It is important that uniform practices be adopted.

LMS Recommendation 4 advocates that required fixed periods of shut-in time for specific items of noncompliance or combinations of items be added to existing enforcement authority. In response to an inquiry the Solicitor's Office stated, "The question to be asked is whether a particular regulation is designed to punish or whether it is germane to the regulatory function.... Thus, a period of shut-in which is necessary to carry out a legitimate regulatory function is permissible; however, if it is designed strictly for punishment it is not permissible, and new legislation would be required".

While it might be argued that such a shut-in would be designed as a deterrent to a recurrence of the violation, it is difficult to consider the shut-in itself anything other than a punitive action.

A further aspect is that while such a shut-in might punish the company by a temporary loss or deferment of income, the public would, likewise, have a deferment of royalty income and would suffer a loss of availability of fuel.

WORK GROUP RECOMMENDATION NO. 12

a. The USGS should incorporate into its inspection program all of the NASA recommendations (a. through e. above) and LMS recommendations 1, 2, 3, and 5 above. Punitive fixed-period shut-ins (LMS

recommendation 4 above) are not permissible under existing legislation, nor are they considered advisable.

b. OCS Orders should include requirements for lessees to conduct inspections on a scheduled basis and report the results in a specified format to the USGS.

c. The USGS should explore the feasibility of third-party inspections as an alternative or supplement to lessee inspections.

d. The PINC system of inspection should be periodically reviewed to determine how it can be modified and improved.

e. The USGS should formalize inspection strategies and policies, including optimum frequencies of inspections, and emphasize improvement of methods for evaluating inspection results.

f. The USGS should continue to evaluate procedure for inspection and enforcement to insure the application of rigorous and uniform practices in light of new requirements and past experiences.

IMPLEMENTATION ACTION REQUIRED

While some of the recommendations have already been implemented, the Conservation Division should take the necessary steps to require standardized inspections by lessees.

They should also determine the feasibility of third-party inspections and recommend to the Director appropriate follow-up actions.

Systematic review by the Conservation Division of inspection methods and strategies should be continued. Procedures should be developed for rigorous and uniform application. Inspectors should be instructed accordingly.

Attainable inspection frequency schedules should be developed. Wherein these are less than the optimum, requirements for additional required capacity should be identified.

RECOMMENDATIONS OF STUDIES

NASA--*In order to remain abreast of the ever-changing needs, the following recommendation is made: The USGS Regional Office should organize an OCS Order development and implementation function. This function, technical in nature, involves many hours of research, investigation, and discussion, and should be assigned to a small committee of qualified people selected by the Supervisor. This committee should:*

1. *Schedule meetings periodically to review current needs and evaluate existing Orders.*

2. *Meet with USGS Region management to determine their overall reaction to the proposed order and/or change.*

3. *Schedule meetings with the Offshore Operators Committee and/or subcommittee and discuss the change and the impact it will have on the operators and other companies operating in the OCS and document their comments and/or suggestions.*

4. *Schedule meetings with the USGS District engineers and chief technicians, discuss the proposed changes and document their comments.*

5. *If needed, consult with or solicit advice from field officials of other Government agencies and document their comments.*

6. *Assemble and consolidate the comments into a report for USGS Region management review and evaluation.*

7. *Coordinate for approval with the Washington level.*

8. *After the new Order and/or change has been agreed to by all concerned, develop the final draft to submit to Washington for signature.*

9. *After the Order is approved, serve in an advisory and assistance capacity to USGS management in assuring that concerned USGS and operator personnel thoroughly understand requirements prior to implementation and during implementation.*

NAE --*In order to avoid inhibition of technical development and to take maximum advantage of advances made in equipment and methodology, the U. S. Government policy should be to establish regulations in terms of the objectives to be achieved and not in terms of specific methods of achieving them.*

In permit procedures, there should be continuation and refinement of the current practice of requiring submission of plans of applicants in terms of equipment and including personnel qualification and training procedures which will be used to control hazards. The government should continue to make granting and continuance of permits contingent upon adherence to regulation and submitted plans.

Regulations established for the control of offshore oil operations should take into account on a continuing basis the results of the analysis recommended above, as well as consideration of the natural environmental hazards (such as hurricanes, earthquakes, or large waves, and the state of the art of working in the marine environment).*

REMARKS

The development of OCS Orders is of utmost importance in achieving and maintaining safety and pollution control in OCS operations. More formalized organization and procedures are needed to develop new orders and to revise existing orders as new and improved technology and operating procedures are developed.

WORK GROUP RECOMMENDATION NO. 13

a. Formalized procedures of the type outlined in the NASA recommendation should be established for development and revision of OCS Orders.

b. In general, OCS Orders should specify the objectives to be achieved, with standards for achievement included by reference.

c. The Work Group agrees with the NAE recommendations that 1.) there should be continuation and refinement of the current practice of requiring submission of plans of applicants in terms of equipment and including personnel qualifications and training procedures; and 2.) that regulations should take into account on a continuing basis the results of the analysis of information resulting from accident evaluation, as well as consideration of natural environmental hazards.

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* Information resulting from accident evaluation

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should prepare written procedures outlining the step-by-step actions to be followed in the formulation of OCS Orders for all areas, in keeping with the NASA and NAE recommendations.

14. STANDARDIZATION OF FORMS

RECOMMENDATIONS OF STUDIES

NASA--*It is recommended that the USGS revise the Pollution Report form, presently being utilized in the District offices, and require its use by the operators for those spills presently requiring written confirmation. The form should include as a minimum the following:*

a. *More detailed information, especially in the area of cause and corrective action. For example, if equipment malfunction is the cause, the reason should be recorded in detail.*

b. *The "corrective action taken" remarks should include, in detail, the repair, if any, that was accomplished to correct the immediate problem.*

c. *Information should be provided as to action taken to prevent recurrence.*

REMARKS

A revised Pollution Report form is needed to derive necessary information for corrective actions.

WORK GROUP RECOMMENDATION NO. 14

The Work Group agrees with the NASA recommendation above.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should revise the form and require its use.

15. SAFETY AND ADVISORY COMMITTEES

RECOMMENDATIONS OF STUDIES

LMS --1. *Establish Offshore Operators Subcommittee on Safety--Subcommittee and the Survey should periodically review the performance of the Safety Program and exchange information on potential hazards and review program specifications.*

2. *A hazard review committee should periodically review reports of accidents, unusual operating conditions, equipment malfunctions, and inspection results, assess the adequacy of the current OCS Orders, and recommend changes in regulations or procedures which would reduce risks of accidents and associated losses to both industry and government.*

OTHER--*The Director, USGS, recommended a review committee be established on safety of OCS petroleum operations to serve as an independent audit of the effectiveness of USGS operations and procedures.*

REMARKS

The recommended committees would serve to focus attention on safety and anti-pollution problems, and apply the collective expertise of several disciplines to provide solutions. A review committee would also serve as an independent audit of USGS OCS policies and operations.

As a result of the Work Group's suggestion, subcommittees on safety under the Offshore Operators Committee and the Western Oil and Gas Association have already been established. These subcommittees can 1.) review proposed changes or additions to orders and regulations, 2.) analyze industrial-type accidents that occur during drilling and producing operations, including pipeline operations, workovers, installing platforms, and related activities, 3.) collect statistics on industrial-type accidents and their causes, and 4.) promote and review the results of systems analyses.

After consideration of alternate ways to establish a review committee, arrangements were made for the committee to be established under the auspices of Marine Board, National Academy of Engineering.

It is expected to be established in July 1973 with the following objectives:

- o To provide advice on the policies and procedures of the USGS in fulfillment of its regulatory responsibilities for petroleum and gas operations in federal offshore areas related to safety, pollution control, and environmental protection.

- o Review, on an advisory basis, regulations, Outer Continental Shelf Orders, field rules, and the conduct of operations.

- o Prepare recommendations on the design of safety procedures and systems, and related programs.

- o When requested, review significant events and prepare recommendations for corrective measures.

- o To keep the public informed of its findings.

WORK GROUP RECOMMENDATION NO. 15

a. Encourage the Offshore Operators Committee (OOC), as well as the Western Oil and Gas Association (WOGA), to establish a committee on safety. This committee can serve as a vehicle for communication between the operators and the Survey in discussions of general problems that arise.

b. Establish a Systems Review Committee in each area with OCS operations, to be composed of key USGS field personnel. This committee should meet regularly to review accidents, unusual conditions, equipment failures, inspection results, and the adequacy of OCS Orders, and recommend appropriate changes in regulations, orders, and procedures. Reports of findings and recommendations should be submitted in writing to the Supervisor, with copies, through channels, to the Director, USGS.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should communicate with the safety committees of OOC and WOGA to maximize their effectiveness.

The Systems Review Committees should be established by the Conservation Division.

The Director, USGS, should propose items to the review committee for consideration. These would, of course, be additional to items which the committee would determine to consider on its own.

APPENDIX

Identification of Study Reports

1. "Applicability of NASA Contract Quality Management and Failure Mode Effect Analysis Procedures to the USGS Outer Continental Shelf Oil and Gas Lease Management Program," November 1971.

Members:

Morris K. Dyer, NASA	--	Marshall Space Flight Center
Dewey G. Little, NASA	--	Mississippi Test Facility
Earl G. Hoard, NASA	--	Marshall Space Flight Center
Alfred C. Taylor, NASA	--	Michoud Assembly Facility
Rayford Campbell, NASA	--	Michoud Assembly Facility

This report, prepared for the U.S. Geological Survey by a team of National Aeronautics and Space Administration specialists, examines the feasibility of applying to offshore oil and gas operations advanced engineering techniques designed to increase the reliability of safety and anti-pollution equipment, and includes several recommendations. The study period was three months.

2. "Outer Continental Shelf Lease Management Study," May 1972.

Members (USGS):	Part-time Consultants (USGS):
N. C. Matalas, Project Chief	D. R. Dawdy
E. R. Close	B. B. Jackson
Thomas Maddock, III	I. C. James, II
D. W. Moody	
H. E. Robinson	
J. R. Slack	
T. D. Steele	

This is a report of a study conducted by the Systems Laboratory Group, Water Resources Division, U.S. Geological Survey. The study was proposed by OMB and authorized by the Director, U.S. Geological Survey, in August 1970. The report describes Survey's Outer Continental Shelf Lease Management Program and sets forth recommendations for increasing the effectiveness of the program in achieving the objectives of safety and pollution prevention.

3. "Outer Continental Shelf Resource Development Safety: A Review of Technology and Regulation for the Systematic Minimization of Environmental Intrusion from Petroleum Products," December 1972.

Members (Panel of the Marine Board, NAE):

George F. Mechlin, Chairman	--	Westinghouse Electric Corp.
Claude R. Hocott	--	Esso Production Research Company
Bill J. Livesay	--	University of Tulsa
Richard C. Miller	--	Oceanographic Service, Inc.
J. Jamison Moore	--	Atlantis Scientific
William B. Rand	--	Submarex Corp. (Ret.)
Willard F. Searle, Jr.	--	Consulting Ocean Engineers (USN, Ret.)
Harvey J. Smith, Jr.	--	Lockheed Missiles and Space Co.

U.S. Government Liaison Representatives:

Keith B. Schumacher	--	U.S. Coast Guard
Eugene W. Standley	--	Department of the Interior

This is a report of a special study on operational safety in offshore resources development conducted by a panel of experts convened by the Marine Board, National Academy of Engineering, at the request of the Department of the Interior. The panel met in ten working sessions from May 1971 to August 1972. The report contains numerous recommendations.

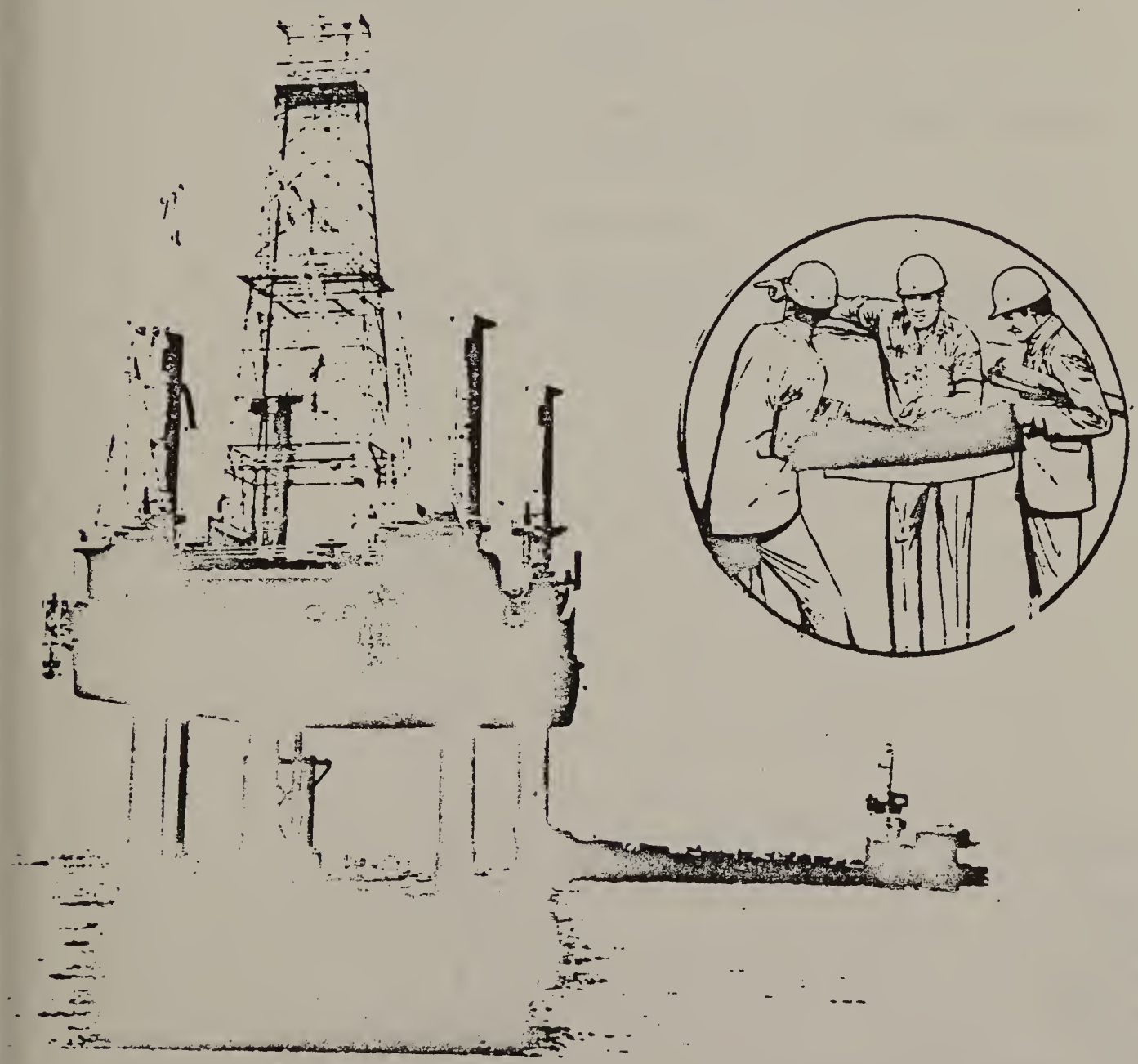
NSERVATION DIVISION

SUPPLEMENT NO. 1

TO THE

REPORT OF THE WORK GROUP ON OCS SAFETY & POLLUTION CONTROL, MAY 1973

U.S. GEOLOGICAL SURVEY



MAY 1974

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Supplement No. 1

to

REPORT OF THE WORK GROUP ON OCS SAFETY AND POLLUTION CONTROL, MAY 1973

U. S. Geological Survey

Work Group Members:

A. Dewey Acuff
J. R. Balsley
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Hubert Risser
W. A. Radlinski, Chairman

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Foreword

This supplement is a response to recommendations of the report, Energy Under the Oceans, a technology assessment of Outer Continental Shelf oil and gas operations, published in November 1973, by the University of Oklahoma Press. The report is the result of a study conducted by an interdisciplinary research team, headed by Dr. Don E. Kash and Dr. Irvin L. White, University of Oklahoma, and funded by the National Science Foundation.

Responses are made to only those recommendations which pertain to safety and pollution control and over which the U. S. Geological Survey has some control or responsibility. The Work Group which prepared this supplement consisted of the same members who prepared the May, 1973, report responding to recommendations of three earlier studies conducted at the request of the Survey--one by a team of NASA Specialists, one by a group of USGS Systems Analysts, and one by a panel of the Marine Board, National Academy of Engineering.

The Chairman reviewed the University of Oklahoma report at an NSF critique on September 7, 1973, and at an NSF-RANN Symposium on November 19, 1973. The latter review is included as an appendix.

RESPONSE TO RECOMMENDATIONS OF "ENERGY UNDER THE OCEANS"

(A Supplement to the May 1973 Report of the
Work Group on OCS Safety and Pollution Control)

U. S. Geological Survey

The report, Energy Under the Oceans, [1] contains 39 recommendations concerning oil and gas operations on the Outer Continental Shelf. In responding to these recommendations, the U. S. Geological Survey Work Group on OCS Safety and Pollution Control placed them in four categories as follows:

I. Recommendations Over Which the USGS Has No Control

II. Recommendations Already Implemented or in Progress

III. Recommendations Calling for Modifications of Earlier Responses

IV. New Recommendations

I. RECOMMENDATIONS OVER WHICH THE USGS HAS NO CONTROL

This category includes OU [2] recommendations which the USGS cannot implement because of lack of authority or responsibility, or which are specifically addressed to other organizations. No response is made to these by the Work Group. There are 25 recommendations in this category--Nos. 1-7, 9-16, 20, 21, 23-26, 29, 34, 36, and 37. Additionally, OU Recommendation No. 8 calls for a continuation of the present separation of functions and responsibilities between USGS and BLM and, therefore, requires no response from the Work Group. It further recommends a comprehensive plan for OCS development, but the increments of the plan are covered in the other OU recommendations and the applicable ones are addressed individually below.

1/ A Technology Assessment of Outer Continental Shelf Oil and Gas Operations prepared by an interdisciplinary research team under the aegis of the Science and Public Policy Program at the University of Oklahoma, 1973, funded by the National Science Foundation.

2/ OU--University of Oklahoma

II. RECOMMENDATIONS ALREADY IMPLEMENTED OR IN PROGRESS

In the second category of OU recommendations are four (Nos. 27, 28, 30, and 35) that are nearly identical to recommendations made in earlier studies. The Work Group has already responded to these in its report of May, 1973, and implementation actions are in progress. Included are:

OU 27. *Standards. USGS should establish equipment requirements in terms of the objectives to be achieved. While these requirements should include detailed performance standards for all pieces of equipment affecting safety and environment, design specifications should not be allowed to act as a deterrent to technological development. The presently used fines and orders for suspension of operations are generally adequate. Detailed standards will require equipment suppliers to establish quality-control procedures. (Chapter VI)*

o Agree. See Work Group Recomendation No. 5 (May 1973 report).

The first project undertaken by an API Committee formed in response to this recommendation was the development of a recommended practice for design, installation, and operation of subsurface safety valve systems (API RP 14B), and specifications for subsurface safety valves (API Std. 14A). These have now been published. A facility for testing of subsurface safety valves is being constructed in Houston, Texas, and will be operated by an independent research institute. A committee is being formed to conduct quality assurance inspections of subsurface safety valve manufacturers. The manufacturers must comply with the quality assurance program as set forth in the specifications for subsurface safety valves in order to be able to use the API monogram on their valves.

Additional projects undertaken by the Committee include: recommended practice for the design, installation, and operation of offshore platform basic surface safety systems (draft standards have been issued); specifications for surface safety valves and actuators; and a recommended practice for platform piping system design. As in the case with subsurface safety valves, quality assurance programs for other equipment items will be initiated as appropriate.

The American Petroleum Institute, the American Society for Testing Materials, the American Society of Mechanical

Engineers, the National Association of Corrosion Engineers, and other similar organizations, as appropriate, will be requested to develop needed standards. USGS representatives will participate in these efforts. Standards developed by these organizations, and appropriate existing standards now referenced in OCS orders, will be submitted to the American National Standards Institute (ANSI) for development, also with USGS participation, and for ANSI approval as national voluntary consensus standards.

OU 28. *Failure Reporting. USGS should establish improved reporting and systematic analysis procedures for failures, malfunctions, and equipment defects, as well as issue appropriate notices and warnings.*

- o Agree. See Work Group Recommendations Nos. 1, 2, and 3 (May 1973 report).

  The USGS is in the process of developing a Failure Reporting and Corrective Action System with a target completion date of June 1974. A "Safety Alert" system for immediate notification of all operators of failures and accidents was established in September 1972.

OU 30. *Review Technology. USGS should appoint an independent and representative committee of experts to review state-of-the-art in OCS technologies periodically and recommend desirable changes in equipment and performance standards. (Chapter VI)*

- o Agree. See Work Group Recommendation No. 15 (May 1973 report). Such a committee was established in July 1973, under the aegis of the Marine Board of the National Academy of Engineering. Its emphasis is on technologies related to safety and pollution control.

OU 35. *Industry Cooperation. USGS should actively promote greater industry cooperation in the development of safety, accident prevention, and environmental protection technologies. Industry should be assured that cooperation in these designated areas will not be subject to anti-trust action. This could be accomplished by having the Anti-Trust Division of the Department of Justice issue guidelines for cooperative efforts or by having the Division give opinions on specific proposals. (Chapter VI)*

- o Agree. See Work Group Recommendations Nos. 4, 5, and 10 (May 1973 report). Three cooperative committees with

API were established in September 1972--Offshore Safety and Anti-Pollution Equipment Standards; Offshore Safety and Anti-Pollution Research; and offshore Safety and Anti-Pollution Training and Motivation. All are active. The Department of Justice, by letter of November 29, 1972, stated that "it would not violate the antitrust laws for the Geological Survey to disseminate lessee-filed reports relating to the breakdown of safety and anti-pollution control equipment to all lessees operating on the OCS."

III. RECOMMENDATIONS CALLING FOR MODIFICATIONS OF EARLIER RESPONSES

In the third category of OU recommendations are six (Nos. 18, 19, 31, 32, 33, and 39) that are similar to recommendations already made by the Work Group but call for some additional responses. The Work Group's responses to these are as follows:

OU 18. *OCS Orders: Coverage. All design specifications and regulations for which USGS has administrative responsibility, including those resulting from interagency agreements, should be detailed in OCS orders for each USGS area. OCS orders should be a detailed composite of the regulations and criteria under which oil and gas operations are to be carried out. Such a composite would inform both industry and the interested public of operational standards. (Chapter VI)*

OU 19. *OCS Orders: Preparation. All OCS orders should be reviewed in advance by committees representing both industry and other interested parties selected by the Chief of the Conservation Division of USGS. At present, preparation of OCS orders involves industry participation. For example, in the Gulf Coast area, proposed orders are reviewed by the Offshore Operators Committee. Broadening the range of reviewers should assure sensitivity to a wide set of social concerns at the immediate management level. Placing selection in the Conservation Division in Washington should provide access to the best informed people in organizations such as the national environmental interest groups. (Chapter VI)*

- With respect to the OU Recommendation No. 18, the Work Group agreed with and responded to all aspects, except it did not specifically address the matter of interagency agreements. It does so in the revised recommendation given below (paragraph d.).

With respect to OU Recommendation No. 19, the Work Group agrees that broadening the range of reviewers is desirable, and further concludes that proposed Orders should be made available to all interested organizations on an equal basis. It may be necessary during the drafting stage to consult with individuals, from industry or elsewhere, on specific aspects of proposed Orders in their capacity as individual experts on certain specialized requirements. Proposed Orders, however, should not be made available to industry or other groups prior to their publication in the Federal Register.

Accordingly, Work Group Recommendation No. 13 (May 1973 report) is revised as follows to respond to OU Recommendations 18 and 19 (additions and changes are underlined):

WORK GROUP RECOMMENDATION NO. 13 (Revised)

a. Formalized procedures of the type outlined in the NASA recommendation should be established for development and revision of OCS Orders.

b. In general, OCS Orders should specify the objectives to be achieved, with standards for achievement included by reference.

c. The Work Group agrees with the NAE recommendations that 1) there should be continuation and refinement of the current practice of requiring submission of plans of applicants in terms of equipment and including personnel qualifications and training procedures; and 2) that regulations should take into account on a continuing basis the results of the analysis of information resulting from accident evaluation, as well as consideration of natural environmental hazards.

d. All memoranda of understanding and interagency agreements concerning management of OCS petroleum activities should be made available in a single document, and appropriate references made in OCS Orders.

e. The Conservation Division should adopt the following procedures for the development of new and revised OCS Orders:

   (1) Announce in the Federal Register its intention to prepare a new or revised Order and solicit comments and recommendations.

(2) Prepare a draft of the Order and publish it in the Federal Register for comment.

Steps (1) and (2) may in some cases be concurrent.

(3) After receipt of comments, Division personnel may meet with interested organizations or consult with individual experts on the various requirements of the Order.

(4) Revise the draft Order, if appropriate, to take into account the information developed from steps (2) and (3).

(5) If the revision is extensive or significant, republish the Order in the Federal Register as a redraft for further comment. Otherwise, publish it in the Federal Register as a final Order with an effective date.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should prepare written procedures outlining the step-by-step actions to be followed in the formulation of OCS Orders for all areas and should assemble and make available all applicable memoranda of understanding and interagency agreements.

OU 31. *Government R&D.* *USGS should undertake an expanded research, development, and testing program as necessary to insure optimal regulation and rapid development of new equipment and procedures. So far as possible, this work should be contracted with organizations outside the R&D system of the petroleum industry. This will help to insure that USGS and OCS operators maintain continuing effective communications with other technological communities. (Chapter VI)*

OU 39. *Inadequate Components.* *USGS should immediately compile a list similar to the following one* (given on pages 259 and 260 of the OU report), *and each year publish a summary review of the progress achieved in correcting weaknesses. This review should continue until the indentification system previously recommended is operational. The physical technologies with weaknesses fall into three categories: need to be developed, need to be improved, and need to be deployed. (Chapter VI)*

- Concerning R&D, the thrust of the Work Group's Recommendation No. 4 (May 1973 report) was to encourage industry to conduct the necessary R&D because of its operational responsibility for safety and pollution prevention. Accordingly, the approach was to establish an API-USGS R&D Committee to encourage industry in this activity. A list of pertinent R&D projects in progress is being completed together with a list of those needs that require new or improved development. Nevertheless, the USGS should have capability for R&D development. Therefore, the Work Group further recommended that in those cases where industry does not respond to R&D needs, the USGS will contract for the required work.

  The Work Group agrees with the second part of OU's Recommendation No. 31--to contract for R&D with organizations outside the petroleum industry to insure effective communications with other technological communities--and responds to this proposal in its revised Recommendation No. 4 given below.

  With respect to OU's Recommendation No. 39, implementation of the Work Group Recommendations Nos. 1, 2c, 3, 4, and 6 (May 1973 report) will provide a basis for compiling a list of inadequate components as well as promotion of R&D for corrective actions. The Work Group did not in its earlier recommendations address the desirability of publishing an annual summary review of progress being made towards correcting the weaknesses. It agrees, however, that this should be done.

  Accordingly, to respond to OU's Recommendations Nos. 31 and 39 the Work Group revises its Recommendation No. 4 (May 1973 report) as follows (additions and changes are underlined):

  WORK GROUP RECOMMENDATION NO. 4 (<u>Revised</u>)

  a. The USGS, in cooperation with the API <u>or other appropriate organizations</u>, should establish a program to encourage and promote research and development in safety and anti-pollution equipment and systems. Current and completed research and development should be taken into account in the determination of specific needs. Such needs should be communicated to industry

through API or other appropriate organizations, and issued by USGS as an annual summary report. For those needs where there is no response from industry, or the response is unsatisfactory, the USGS should contract for the required work, utilizing, when appropriate, organizations outside the usual petroleum industry R&D establishments to perform such research. (See also Recommendation No. 8a.)

b. With specific reference to the NAE recommendations, the Work Group recommends:

(1) The promotion of industry consensus standards should be effected through a cooperative arrangement with API (see Work Group Recommendation No. 5).

(2) Requests should be made to NOAA, USCG, and EPA to sponsor programs to study the effects of various amounts of crude oil intrusion into the marine environment, taking into account site variables.

(3) The recommendation to undertake quantitative studies of the effectiveness of methods for cleaning up oil from the marine environment should be referred to the U. S. Coast Guard.

(4) The development and testing of damage-limiting and fail-safe systems in the area of damage control, fire-fighting, and well control should be an item for follow-up under cooperative arrangements with API, or other appropriate organizations.

c. Industry should be encouraged to grant reasonable access to patented safety and pollution control devices and systems to offshore operators.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should identify those physical technologies and operational

methods in need of R&D, which have a significant impact on safety and pollution control, and for which industry R&D efforts are considered inadequate or lacking. As these are identified, the Division should prepare a plan for contracting with organizations outside the petroleum industry, but giving consideration to R&D work which could be carried out by the Government itself. The plan should include recommendations for the funding of such R&D work.

The Conservation Division should also establish which organizations, other than API, could be considered for assistance in the R&D efforts of the USGS, and their participation utilized when appropriate.

OU 32. *Personnel Standards. USGS should develop uniform standards and certification requirements for personnel who perform inspection and test functions. (Chapter VI)*

OU 33. *Personnel Training. USGS should develop a program to establish improved and standardized training and procedures for operating personnel. This program should utilize the expertise of organizations and individuals such as behavioral scientists who specialize in training. (Chapter VI)*

o Work Group Recommendation No. 9 (May 1973 report) does not preclude the development of standards and requirements for personnel who perform inspection and test functions. However, Recommendation No. 9 should be amended to identify this specific need. Likewise, the desirability of utilizing training specialists should be addressed. Accordingly, Work Group Recommendation No. 9 (May 1973 report) is changed as follows (additions and changes are underlined):

WORK GROUP RECOMMENDATION NO. 9 (Revised)

a. The USGS, working with industry through API, should set standards and requirements for training of personnel, to include, but not be limited to, the following:

(1) A requirement that all operator or third party personnel, who perform

inspection and test functions related to safety and pollution control, be formally trained and qualified.

(2) A requirement for minimum training in safety and pollution prevention and control for all company and contractor personnel, including identification and proper use of safety equipment, emergency procedures, and first aid.

(3) A requirement that appropriate company and contractor field personnel be briefed on USGS regulations and orders.

b. Standards and requirements for such training should be specified in OCS Orders and a certification, by the operator, of compliance should become a prerequisite for inspecting, testing, and for certain permits and operational work. A system for updating and auditing such training should be developed. Appropriate credit should be given for pertinent experience.

c. The expertise of organizations and individuals who specialize in training should be utilized in the development of standards and requirements for training.

d. USGS field supervisory and inspection personnel should be required to participate in training courses appropriate to their responsibilities.

(The "third party" inspectors referred to in a.(1) above could be someone in the employ of the operator who is not responsible for the operations he is inspecting and who reports directly to management, or someone who is an employee of an outside firm with which the operator or group of operators contract for inspection services.)

IMPLEMENTATION ACTION REQUIRED

Arrangements have been made with API for a joint effort to develop the necessary standards and specifications for training of industry personnel. The Conservation Division should pursue this effort and revise OCS Orders accordingly.

Requirements for appropriate training of USGS personnel should be included in the Division Manual.

The Conservation Division should arrange for briefing programs on USGS regulations and orders.

IV. NEW RECOMMENDATIONS

The final category of OU recommendations include three (Nos. 17, 22, and 38) that are essentially different from those considered by the Work Group. These are discussed in the text that follows.

OU 17. *USGS Management. With limited exceptions, post-lease sale management of OCS oil and gas operations should be concentrated in USGS. The objective of this concentration of management is to eliminate gaps and overlaps and establish clear-cut responsibility. Such concentration will also assure that management decisions conform to the development plan laid out in the hierachy of impact statements. Any impact statements triggered by post-lease sale activities should be the responsibility of USGS and be subsidiary to the lease sale statement. Where necessary, transfer of operational responsibility to USGS should be accomplished by inter-agency agreements. In summary, then, the USGS should continue to administer all of its present post-lease activities plus the following: (Chapter IX)*

- The Work Group agrees that the USGS should continue to administer all of its present post-lease activities. Comments on OU Recommendations 17a. through 17d. follow.

OU 17a. *OSHA. By agreement between Labor and Interior, OCS responsibilities assigned to the Department of Labor by the Occupational Safety and Health Act (OSHA) should be administered by USGS. The standards themselves should be developed by Labor with the advice of USGS and the Department of Health, Education, and Welfare (HEW). Such an arrangement will increase the effective day-to-day administration of the OSHA standards since USGS is already equipped to inspect OCS facilities. Further, these safety*

and health concerns are intimately tied to equipment design and operational procedures that are already a USGS responsibility. As a final advantage, this approach relieves industry of an additional layer of inspectors.

- The Work Group agrees. A draft of a Memorandum of Understanding was completed in March 1974 but questions of statutory authority and responsibility are as yet unresolved.

WORK GROUP RECOMMENDATION NO. 16

A Memorandum of Understanding between the USGS and OSHA should continue to be sought.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should continue to take the lead in negotiating a Memorandum of Understanding between OSHA and the USGS.

OU 17b. *Environmental Administration. USGS should be responsible for enforcing all environmental quality standards applicable to OCS oil and gas operations. Where necessary, agency responsibilities should be clearly defined in inter-agency agreements between Interior, Transportation, and EPA.*

- Enforcement authorities are usually assigned by statutes. However, various inspection and monitoring activities upon which enforcement actions are based can sometimes be shared or delegated. Accordingly, current efforts towards finalizing various Memoranda of Understanding to clearly define the respective functions, scope of activities and responsibilities among the agencies involved in various aspects of environmental protection on the OCS should be expedited, and the results publicized for the guidance of all concerned. The Work Group addresses specific items in this regard in its Recommendations Nos. 13 (Revised), 16, and 17 of this report.

OU 17c. *Rights-of-Way. By formal agreement between BLM and USGS, BLM should issue rights-of-way for common carrier pipelines only upon recommendation of the USGS. This will assure that coordination exists between common carrier lines and the gathering lines presently regulated by USGS. Such authority will allow USGS to insure that pipeline development conforms to the plans developed in the impact statements. Present responsibility for pipelines is fragmented, and some agencies are incapable of meeting their regulatory responsibilities.*

OU 17d. *Pipelines. By formal agreement between the Office of Pipeline Safety (OPS) and Interior, USGS should be designated as responsible for enforcing design and performance standards for offshore pipelines which are now under OPS jurisdiction. The standards, however, should be jointly formulated by OPS and USGS. USGS presently exercises such authority over gathering lines.*

- Activities for the development of Memoranda of Understanding between USGS, BLM, and OPS in accordance with the intent of OU Recommendations 17c. and d. have been underway for some time. The principal delaying factors have been the need for reviews of the respective pipeline administering activities, including legal reviews, to clarify the statutory authorities and responsibilities of USGS, BLM, and OPS.

Current draft proposals of Memoranda of Understanding between USGS and BLM provide for USGS review, prior to final action by BLM, of all rights-of-way applications to install common carrier type pipelines pursuant to 43 CFR 2883. The reviews by USGS would focus on the technical aspects of OCS pipeline design, installation, maintenance and operation in accordance with appropriate regulations and standards designed for safety and environmental protection, and to avoid undue interference with other uses of the OCS and its superjacent waters. The USGS, in cooperation with BLM, will continue efforts to formulate an agreement with OPS whereby OPS safety standards developed for OCS pipelines may be enforced by the USGS.

WORK GROUP RECOMMENDATION NO. 17

a. A Memorandum of Understanding between USGS nad BLM should be developed whereby BLM approval of pipeline rights-of-way applications will require a determination by USGS of the adequacy of the application with respect to design, installation, maintenance and operation.

b. A Memorandum of Understanding between USGS, BLM, and OPS should be formulated whereby the USGS will enforce OPS safety standards, jointly developed by OPS and USGS, for OCS pipelines.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should continue efforts to formulate a Memorandum of Understanding between the USGS and BLM concerning pipeline rights-of-way and a Memorandum of Understanding between USGS, BLM, and OPS for the enforcement of safety standards for pipelines.

OU 17e. *Gas Reserves. By formal agreement between the Federal Power Commission (FPC) and Interior, USGS should be required to provide estimates of recoverable gas reserves to be served by proposed new gas lines. Attached to the estimates should be an assessment of how the line will fit into the development plan established in the impact statements. Additionally, USGS should be available to FPC for consultation on all questions concerning lines. The purpose is to assist FPC in approving new pipelines so that they conform to the development plan established in the impact statements.*

- Estimates of recoverable gas reserves to be served by proposed new gas lines are the responsibility of FPC, but the USGS has cooperated with the FPC when requested and is available for assistance and consultation.

OU 22. *Apply FWPCA to OCS. The FWPCA Amendments of 1972 should be amended specifically to apply discharge provisions to the OCS. Under this arrangement,*

EPA would establish the standards, but as recommended earlier, USGS would have enforcement responsibility. There is no apparent reason why the general principle of a separate agency to set environmental standards should not be applicable to the OCS. Such a separation provides an additional check and increased public credibility in this sensitive area. (Chapter X)

o The OU recommendation implies that the pollutant discharge provisions of the Federal Water Pollution Control Act (FWPCA) Amendments of 1972 are not applicable to OCS lease operations. This is contrary to the memorandum opinion of January 30, 1973, of the Assistant Solicitor, International Marine Minerals, Department of the Interior. The Assistant Solicitor's opinion was that discharges of pollutants from OCS structures are subject to the National Pollutant Discharge System established by the 1972 FWPCA Amendments. The applicable paragraph of the opinion states:

> "It should be noted that the Administrator, Environmental Protection Agency, is given broad discretionary and regulatory authority in implementing and administering the provisions of this legislation. In particular, your attention is invited to section 501(b) authorizing the Administrator to utilize the officers and employees of any other agency of the United States (with the consent of the head of such agency) to assist in carrying out the purposes of the Act. In these circumstances, it is recommended that you contact appropriate EPA officials regarding the possibility of an agreement under which the expertise of Geological Survey officials would be utilized in the administration of the National Pollutant Discharge System in its application to discharges arising from OCS lease operations."

Accordingly, the USGS has initiated discussions with EPA to consider the feasibility of a Memorandum of Understanding to minimize a redundancy of efforts and to utilize the expertise of USGS field personnel in the administration of the National Pollutant Discharge System with respect to OCS lease operations.

WORK GROUP RECOMMENDATION NO. 18

- o The USGS and EPA should continue to pursue their discussions leading to the joint development of discharge standards for the OCS and a Memorandum of Understanding calling for enforcement by the USGS.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should pursue efforts to develop a Memorandum of Understanding between USGS and EPA for the formulation and enforcement of pollutant discharge standards.

OU 38. *Subsea Production Systems. USGS should encourage early development and use of subsea production systems. Parallel to this, efforts should be made to formulate those specifications and regulations necessary to insure safe operation of subsea production systems. (Chapter VI)*

- o Subsea production systems represent one of many relatively new and advanced systems and technologies presently under development and in limited use which, of course, should be encouraged. USGS solicits briefings and demonstrations by the developers of such systems, and provides advice on requirements and design features. Specifications and regulations necessary to insure safe operations of subsea production systems can be formulated by implementation of Work Group Recommendations Nos. 5, 6, and 13 (May 1973 report).

WORK GROUP RECOMMENDATION NO. 19

a. The USGS should make a special effort to become acquainted with all subsea production systems under development and in use.

b. Industry should be encouraged to speed up development and testing of such systems. USGS personnel should be observers of such tests.

c. If it is determined that subsea production systems are preferable from an environmental standpoint, their use should be encouraged.

d. The cooperative USGS-API committee on standards should sponsor the preparation of standards and specifications of the safety and pollution control aspects of subsea production systems at the earliest appropriate time.

e. Concurrent with development and testing, USGS should begin the preparation of OCS Orders covering the use of subsea production systems.

IMPLEMENTATION ACTION REQUIRED

The Conservation Division should actively pursue each of the items in Recommendation No. 19.

APPENDIX

An Evaluation of "Energy Under the Oceans"--A Report of Study Conducted by the Technology Assessment Group, Science and Public Policy Program, the University of Oklahoma, August 1973[1/]

By W. A. Radlinski, Associate Director
U. S. Geological Survey

The technology assessment of Outer Continental Shelf (OCS) oil and gas operations made by a research team under the aegis of the Science and Public Policy Program, University of Oklahoma, is of special significance to the U. S. Geological Survey (USGS). We have the responsibility for the issuance of exploration permits and the supervision of operations authorized by leases on the OCS. And, it is our job to see that this work is done in accordance with the law--safely, without damage to the environment, and in keeping with optimum conservation practices.

The Survey's responsibility involves the management of over 1100 leases and nearly 2000 OCS platforms in the Gulf and 5 in the Santa Barbara Channel. These include over 6,200 wells and 10,000 well completions. Over 800 requests for permits to drill were processed in the past year. Platforms in the Gulf are as far as 98 miles from shore and are in water depths to 373 feet. The area of drilling and producing operations covers approximately 40,000 square miles. In the Santa Barbara Channel the platforms are about six miles from shore and are in waters up to 191 feet.

We also collect royalties from production at the rate of 16 2/3%. Last fiscal year this amounted to $360 million. Production in Fiscal Year 1973 amounted to 446 million barrels of crude oil and natural gas liquids, and 3 trillion cubic feet of marketed gas, with a total value of over $2 billion.

1/Prepared for the NSF-RANN Energy, Environment, and Productivity Symposium, November 19, 1973, Washington, D.C..

Accident reduction, pollution control, and environmental protection involve a number of factors, each of which contribute to an overall strategy. These include:

- o Stringent regulations insuring (but not limited to)
  - good systems designs and construction,
  - redundant safety systems,
  - training of personnel,
  - accident and equipment failure reporting,
  - and corrective action procedures.

There are currently 12 OCS Orders covering the Gulf of Mexico area and 10 for the Pacific Area (Santa Barbara Channel), the only two areas where OCS operations are now being conducted.

Other elements of our strategy are:

- o An effective inspection program
- o Safety motivation of operators and employees
- o Research and development
- o Third-party review of our policies and procedures
- o Environmental assessments.

It is with these elements in mind, and with regard for problems of the future that can result from an acceleration of lease sales into new areas, deeper waters, and different environments, that I comment now on the Oklahoma report.

Overall it's a very good report. We welcome it at the Geological Survey and we intend to respond to each of the applicable recommendations.

In fact, we have already responded to many of them as a result of implementation plans we developed in response to recommendations of three earlier reports--one by a study team from NASA, another an in-house study by a team of USGS systems analysts, and the third by a panel of the Marine Board, National Academy of Engineering. A report of these plans is available from the USGS.

All four of the reports are compatible and many of the respective recommendations are the same, but the Oklahoma report goes much further than any of the other three. In-depth considerations of Government management and jurisdictions are unique to the Oklahoma study, as is its plan for OCS development. The recommendations from these sections will contribute importantly to "rational OCS policy making" and to "optimal resources development," to quote objectives from the purpose of the study.

Of the 12 recommendations under "Management of Technologies," 9 are aimed directly at the Survey and 3 at industry. Of the 22 recommendations on "General Policy and Management," 10 involve the Survey. And all of the items listed under the recommendation for "Specific Technologies" directly affect the success of our lease management responsibilities.

Referring now to the category on Management of Technologies, herewith is the status, in brief, on the 9 recommendations applicable to the Survey:

Standards -- Standards for the critical items of equipment are being developed under a joint API-USGS committee arrangement which involves OOC and WOGA.

These will be submitted to ANSI or other appropriate standards-setting organizations for review, and included in OCS Orders by reference. Quality control procedures for manufacturers are included.

Failure Reporting -- As announced in our press release of June 14, 1973, we intend to establish a failure reporting and corrective action system. A "safety-alert" system for immediate reporting to all lessees of equipment malfunctions, accidents or near accidents is already in effect.

Review Technology -- A Review Committee under the auspices of the Marine Board, National Academy of Engineering has already been established to serve as a third-party audit of our procedures and operations and to review state-of-the-art technologies.

Personnel Training -- A joint API-USGS committee is already working at establishing curricula and training requirements for operating personnel. We are also establishing formal training requirements for our inspectors.

Industry Cooperation -- The joint API-USGS committee on training is also developing programs for safety motivation. We have already gotten a Department of Justice opinion that information exchange in the interest of safety and environmental protection is not in violation of Anti-Trust Laws.

Subsea Production Systems -- The first OCS proposal for a subsea production system (i.e., more than one well) is presented in a draft Environmental Impact Statement now being aired publicly for the development of the Santa Ynez unit in the Santa Barbara Channel.

There are, of course, some conclusions and recommendations in the report with which we do not agree, and we are aware of disagreements by others, both pro and con. But this is to be expected from a 380-page report of a study as comprehensive as this one was. Disagreements are, of course, healthy, for they prompt dialogue and help bring out the facts. But in some cases, they have been presented out of context in support of an extreme position, either to discredit the entire report or as a basis for condemnation of all OCS development. It is important to recognize the overall objective of the study--to insure that development of the OCS is optimal in a broad social sense--and to recognize that individual recommendations are made in the context of improving, not condemning, OCS development. This is the way we in the Geological Survey are viewing it, and I feel certain this was the intent of the Assessment Group.

Our reasons for not agreeing with three of the recommendations in the Management of Technologies part of the report are as follows:

Accident Investigation -- We have not established a board similar to the National Transportation Board to investigate OCS accidents. Our present practice is to have all accidents

investigated by Survey personnel in accordance with fixed procedures. Major accident reports will be submitted to our Review Committee (mentioned earlier) for review. While we consider this procedure adequate for the present, we will give further consideration to the establishment of a separate board. We do intend that all reports of major accidents will be made public.

Personnel Standards -- We have not yet concluded that certification of company personnel is a viable procedure for insuring performance. Our present objectives are to establish required standards for training or experience before allowing operations to proceed. Certification, per se, involves numerous problems of establishing certification authorities, updating, employee union regulations, and State laws. We feel that training and experience standards may serve the purpose effectively.

Government R&D -- We have not established an in-house research, development, and testing program for a very practical reason--no funds. But that's not the total reason. We should have some capability for research, but we feel that the ultimate responsibility for safety and pollution prevention rests with industry. Accordingly, our approach was to establish an American Petroleum Institute (API)-USGS R&D committee to encourage industry in this activity. A list of pertinent R&D items under

investigation is being completed together with a list of those items that require new or improved development. We have informed industry that in those cases where they do not respond to R&D needs, the Government will undertake the work. But even so, public funds will need to be provided.

Concerning findings of other parts of the study -- the publication of a list of "Inadequate Components," called for in the recommendation under "Specific Technologies," will be a natural result of our aforementioned failure reporting and corrective action system. Further, these results will provide information to an established research committee to identify items for research and development. The lists of components to be developed, improved, and deployed will be passed on to the R&D committee and to a Standards Committee which is currently very active. The latter committee, by the way, has already drafted detailed standards for improved downhole safety devices which are currently being reviewed. Sand probe development and standards are high on the list of priorities.

Finally, I shall comment on the "General Policy and Management" part of the report. While we agree that promotion and regulation functions should remain divided between the Bureau of Land Management (BLM) and USGS to provide a continuous checking mechanism, we do not agree that the Survey should take the lead in preparing programmatic environmental impact statements. Programmatic concerns should remain the responsibility of BLM or the Council on Environmental Quality, as is the case in the environmental assessment of the Atlantic and Gulf of Alaska OCS. We, as well as National

Oceanic and Atmospheric Administration and many others, provide the geologic, geophysical, seismic, and other environmental data and analyses that are necessary for a full environmental impact assessment. I believe this procedure complies better with the intent, if not the organizational structure, of the study recommendations. The question of sufficiency of data is, of course, a budget problem.

Concerning the matter of concentration in the USGS of all management responsibilities on the OCS, we are currently working with the Office of Pipeline Safety to specify our respective roles. We have had meetings with the Occupational Safety and Health Administration along the same lines; we are developing understandings with the Environmental Protection Agency, and we do support the Federal Power Commission in providing estimates of recoverable gas reserves.

Lastly, by a recent policy decision, we are now publishing all new and revised OCS Orders in the Federal Register for public comment.

There have been numerous studies, reports, meetings, symposia, and legal actions concerning the development of the OCS. Several are in progress and many more will come. And this is as it should be--on the one side we have a need for the vast mineral resources that lie beneath the ocean floor, and on the other side there is a grave concern over the effects that the exploitation of these resources will have on the environment and hence our future well-being. The significance of the offshore to our national well-being, especially in these times of critical energy shortages, is clear when one realizes that over 11% of the total U.S. oil production and 13% of the gas production came from the OCS in the past year;

that this production is confined to a very small portion of those OCS areas which have petroleum potential; and that discovery and development will hopefully be accelerated as a result of tripling the offerings to three one-million acre lease sales per year.

The Oklahoma report has gone a long way in identifying means of improving development in this important area, and we commend both NSF-RANN and the University of Oklahoma on the study.

ATTACHMENT E

GEOLOGIC TIME CHART

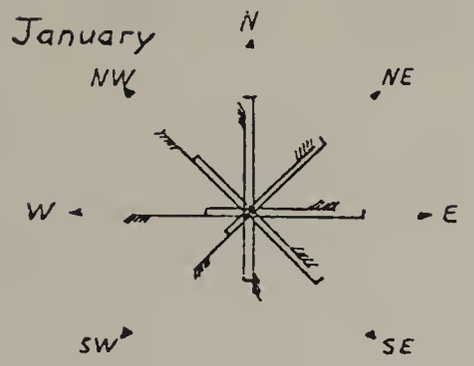
GEOLOGIC TIME CHART

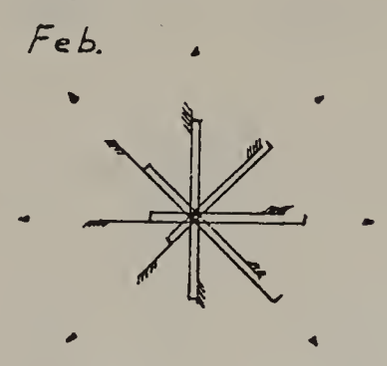
AGE DIVISIONS			TIME			
ERA	PERIOD	EPOCH	DURATION IN MILLIONS OF YEARS			BEGINNING MILLIONS OF YEARS AGO
			ERA	PERIOD	EPOCH	
CENOZOIC	QUATERNARY	RECENT	63.011	1.011	0.011	0.011
		PLEISTOCENE			2	2
	TERTIARY	PLIOCENE		62	12	13
		MIOCENE			12	25
		OLIGOCENE			11	36
		EOCENE			22	58
		PALEOCENE			5	63
MESOZOIC	CRETACEOUS		167	72		135
	JURASSIC			46		181
	TRIASSIC			49		230
PALEOZOIC	PERMIAN		370	50		280
	PENNSYLVANIAN			40		320
	MISSISSIPPIAN			25		345
	DEVONIAN			60		405
	SILURIAN			20		425
	ORDOVICIAN			75		500
	CAMBRIAN			100		600
PRE-CAMBRIAN	GRENVILLE OROGENY					1000
	OLDEST KNOWN ROCKS IN NORTH AMERICA		4000			3200
	OLDEST KNOWN ROCKS (MURMANSK AREA)					3400
	PROBABLE AGE OF THE EARTH					4600

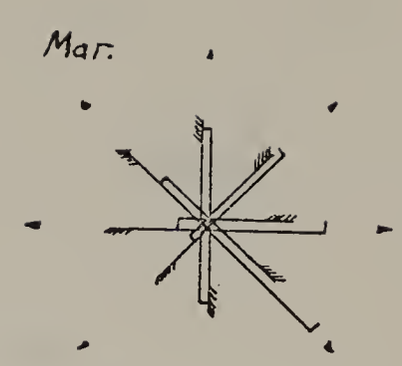
ATTACHMENT F

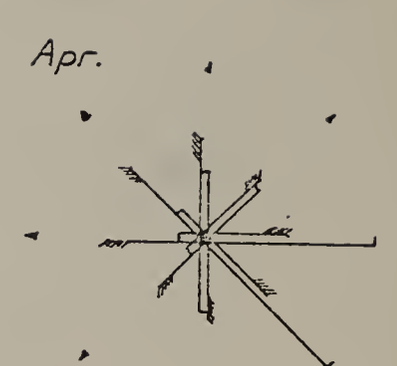
Windroses portraying monthly wind patterns
over the Gulf of Mexico

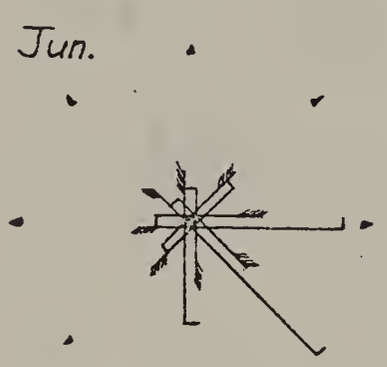
Monthly wind patterns observed over the Gulf of Mexico in an area bounded by 27° N. to the coastline and 89°-92° W (New Orleans Locality)*

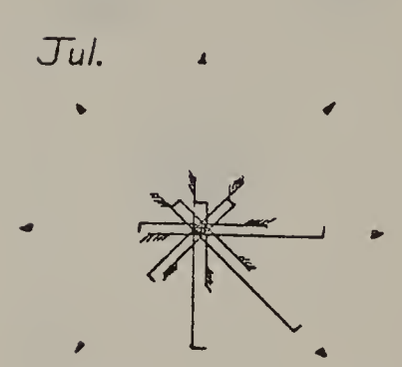


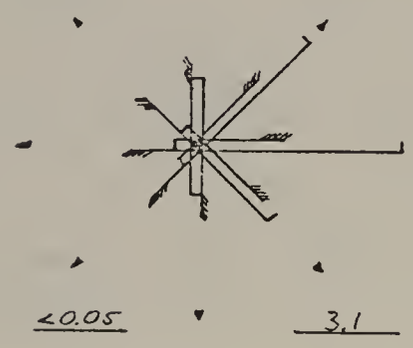


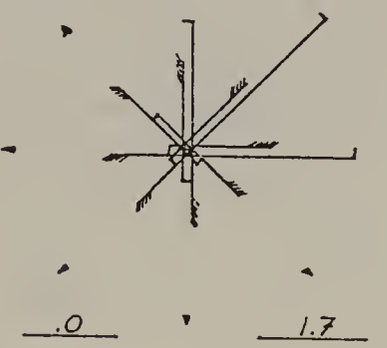


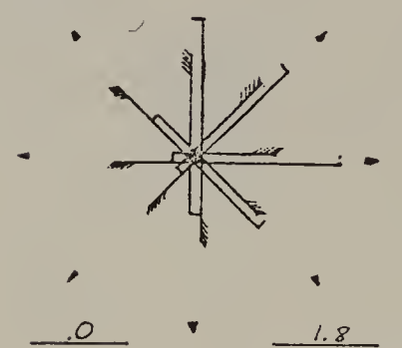


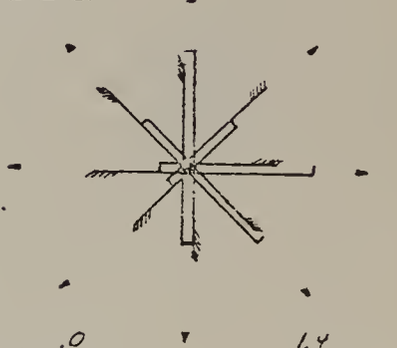










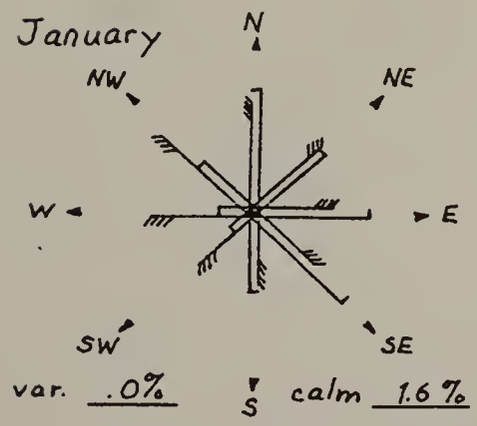


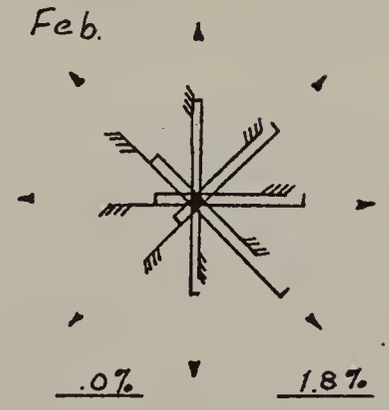
Legend: Scale 0 5 10 15 20 25 mean speed, knots / pct. frequency

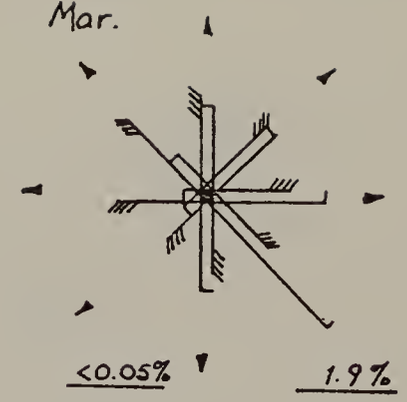
var = variable

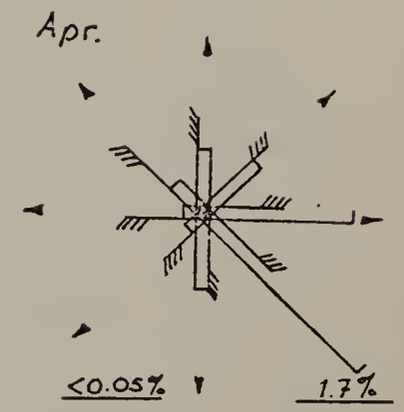
* Data on this page based on 81,091 observations made over the years 1865-1968 from U.S. Naval Weather Service Command 1970, b.

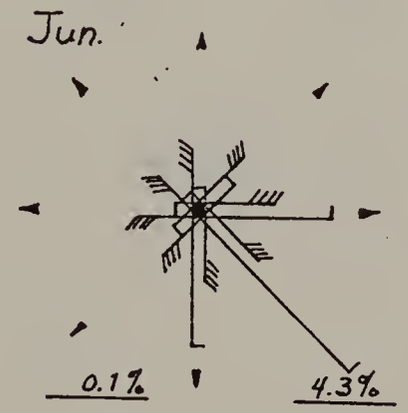
Monthly wind patterns observed over the Gulf of Mexico in an area bounded by 27° N. to the coastline and 92-95°W (Galveston Locality)*

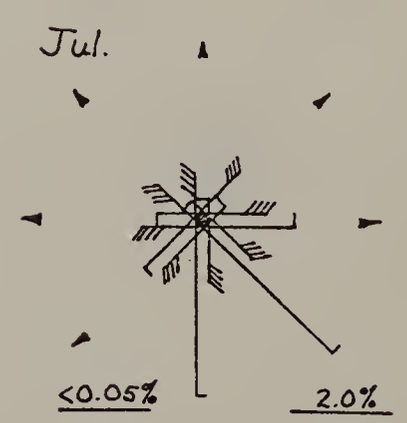


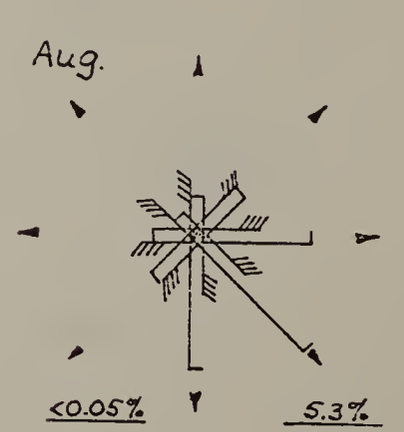


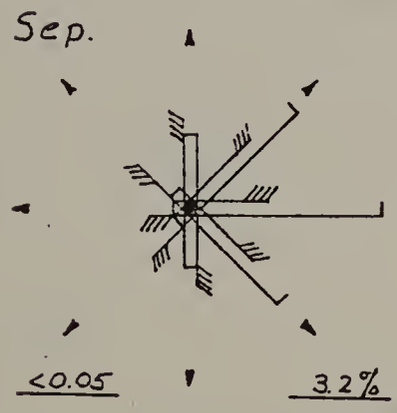


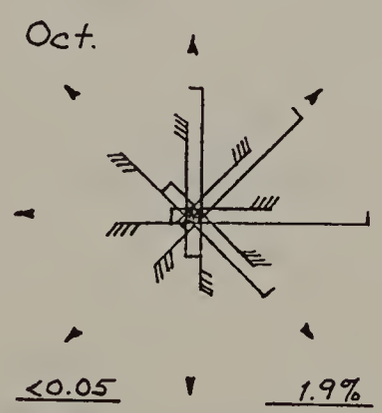












Legend: Scale 0 5 10 15 20 25 mean speed, knots / pct. frequency

var = variable

Data on this page based on 49,392 observations made over the years 1884-1968 from U.S. Naval Weather Service Command 1970, b.

Attachment G

Population, Employment, Personal Income, and Earnings by Industry, Historical and Projected

BEA Economic Areas 138, 139, 140, 141

Attachment G

ECONOMIC AREA 138 - NEW ORLEANS, LA.

TABLE 1. POPULATION, EMPLOYMENT, PERSONAL INCOME, AND EARNINGS BY INDUSTRY, HISTORICAL AND PROJECTED, SELECTED YEARS, 1950 - 2020

	1950	1959	1962	1968	1969	1980	1990	2000	2010	2020
POPULATION, MIDYEAR	1,535,505	1,855,299	1,920,408	2,104,038	2,139,664	2,460,700	2,804,500	3,153,000	3,558,700	4,012,700
PER CAPITA INCOME (1967$)	1,640	2,010	2,036	2,759	2,817	4,069	5,353	7,303	9,724	12,881
PER CAPITA INCOME RELATIVE (US=1.00)	.79	.82	.79	.84	.82	.85	.87	.88	.89	.90
TOTAL EMPLOYMENT	530,342	608,608	592,427			888,500	1,014,100	1,181,900	1,358,100	1,548,000
EMPLOYMENT/POPULATION RATIO	.35	.33	.31			.36	.36	.37	.38	.39
EARNINGS PER WORKER (1967$)	3,771	4,896	5,213			8,816	11,483	14,998	19,485	25,425
EARNINGS PER WORKER RELATIVE (US=1.00)	.84	.91	.90			.94	.94	.95	.95	.96
					IN THOUSANDS OF 1967 $					
TOTAL PERSONAL INCOME	2,517,641	3,728,955	3,909,160	5,808,411	6,028,440	10,013,400	15,013,600	23,028,100	34,606,200	51,690,000
TOTAL EARNINGS	1,599,721	2,979,827	3,088,129	4,602,659	4,782,153	7,833,700	11,645,200	17,726,600	26,463,400	39,308,600
AGRICULTURE, FORESTRY & FISHERIES	142,599	93,975	89,128	139,575	101,936	124,500	141,400	168,900	219,700	292,600
AGRICULTURE	129,509	84,995	78,928	128,916	92,669	110,200	122,900	144,700	188,200	252,500
FORESTRY & FISHERIES	13,095	8,983	10,204	10,662	9,270	14,200	18,400	24,100	31,400	40,100
MINING	41,751	193,501	191,115	259,101	282,250	370,100	458,300	573,600	698,400	850,800
COAL	0	0	0	9	9	(S)	(S)	(S)	(S)	(S)
CRUDE PETROLEUM & NATURAL GAS	35,049	176,921	174,824	238,453	262,830	340,700	418,300	517,400	620,400	741,200
NONMETALLIC, EXCEPT FUELS	6,705	16,583	16,289	20,650	19,407	29,300	39,900	56,200	78,000	109,500
CONTRACT CONSTRUCTION	149,767	215,369	212,074	404,888	431,006	659,500	950,000	1,403,800	2,038,400	2,941,800
MANUFACTURING	420,611	605,612	619,031	944,061	966,704	1,523,000	2,223,600	3,347,000	4,974,900	7,403,500
FOOD & KINDRED PRODUCTS	93,230	124,552	116,680	138,027	134,938	178,300	215,800	269,700	335,200	423,000
TEXTILE MILL PRODUCTS	6,657	3,153	2,543	2,581	2,444	2,900	3,400	4,000	4,700	5,800
APPAREL & OTHER FABRIC PRODUCTS	23,412	29,971	33,239	42,493	43,099	66,600	92,700	131,800	184,100	258,500
LUMBER PRODUCTS & FURNITURE	50,740	45,143	37,243	48,705	50,407	67,000	85,000	111,600	145,400	192,400
PAPER & ALLIED PRODUCTS	43,269	59,361	49,724	70,205	74,604	115,600	167,600	249,600	366,300	537,400
PRINTING & PUBLISHING	18,599	20,910	21,993	30,058	31,031	51,600	78,500	121,600	185,900	283,100
CHEMICALS & ALLIED PRODUCTS	46,609	94,727	99,509	135,674	134,991	341,900	542,300	873,300	1,370,700	2,129,200
PETROLEUM REFINING	63,143	75,277	67,629	73,620	76,432	95,400	117,500	148,700	186,200	237,700
PRIMARY METALS	2,654	23,786	27,214	33,367	35,005	45,100	56,500	72,200	90,900	115,300
FABRICATED METALS & ORDNANCE	13,748	31,093	49,553	103,258	109,530	191,500	298,500	473,500	733,100	1,121,900
MACHINERY, EXCLUDING ELECTRICAL		13,980	15,351	25,385	25,769	43,200	67,100	106,300	164,000	251,700
ELECTRICAL MACHINERY & SUPPLIES		1,206	1,088	703	901	1,600	2,100	3,300	5,000	7,700
TOTAL MACHINERY (1950 ONLY)	6,015									
MOTOR VEHICLES & EQUIPMENT	119	394	254	439	409	700	1,200	2,100	3,800	6,100
TRANS. EQUIP., EXCL. MTR. VEHS.	24,756	39,391	53,704	111,213	119,178	209,300	326,700	519,400	806,200	1,244,300
OTHER MANUFACTURING	27,655	42,660	43,313	68,335	67,959	111,600	168,300	259,400	392,600	538,900
TRANS., COMM. & PUBLIC UTILITIES	251,126	342,712	347,654	473,109	497,799	743,600	1,045,500	1,515,400	2,167,800	3,105,500
RAILROAD TRANSPORTATION	56,912	54,534	48,709	44,715	46,439	58,700	67,300	77,500	86,400	99,000
TRUCKING & WAREHOUSING	18,493	36,201	40,070	66,779	68,595	110,000	162,000	244,800	363,600	538,800
OTHER TRANSPORTATION & SERVICES	133,516	165,653	174,994	241,791	254,074	378,000	529,300	763,900	1,087,900	1,545,100
COMMUNICATIONS	25,151	42,860	44,102	66,060	72,505	112,400	168,100	257,100	384,800	572,500
UTILITIES (ELEC., GAS, SANITARY)	17,047	43,468	39,786	53,770	56,184	84,300	118,600	172,000	245,800	362,700
WHOLESALE & RETAIL TRADE	420,577	595,070	588,840	869,223	875,799	1,453,400	2,154,600	3,278,100	4,891,000	7,252,600
FINANCE, INSURANCE & REAL ESTATE	82,149	155,373	162,044	241,365	250,779	407,000	598,400	900,900	1,331,600	1,951,700
SERVICES	249,550	392,701	430,241	676,791	709,410	1,278,000	2,019,100	3,227,900	5,004,700	7,642,600
LODGING PLACES & PERSONAL SERV.	31,171	48,224	51,019	79,604	80,690	134,800	196,300	293,300	430,500	629,300
BUSINESS & REPAIR SERVICES	22,329	49,641	57,791	102,246	150,191	266,000	420,900	671,400	1,036,000	1,572,400
AMUSEMENT & RECREATION SERVICES	21,253	17,770	20,648	24,781	26,137	41,700	61,000	91,500	134,300	195,500
PRIVATE HOUSEHOLDS	66,426	80,241	79,197	67,334	68,728	87,100	102,100	121,600	141,800	167,900
PROFESSIONAL SERVICES	108,374	196,820	221,587	362,821	363,662	748,300	1,238,600	2,049,900	3,261,900	5,076,700
GOVERNMENT	241,589	385,505	447,999	644,549	666,467	1,274,100	2,053,900	3,310,500	5,136,500	7,867,000
CIVILIAN GOVERNMENT	202,135	348,770	410,682	614,703	635,373	1,235,900	2,004,300	3,246,000	5,053,100	7,748,800
FEDERAL GOVERNMENT	74,879	89,000	104,692	146,523	151,031	263,400	389,600	574,400	808,300	1,105,100
STATE & LOCAL GOVERNMENT	127,255	259,767	305,990	468,182	484,343	972,500	1,614,600	2,671,600	4,244,200	6,643,700
ARMED FORCES	39,452	36,740	37,317	29,848	31,095	38,200	49,600	64,500	83,400	108,400

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POPULATION, APRIL 1, 1970 2,149,269

Reproduced from: U. S. Waters Resource Council, 1972 OBERS Projections, Vol. 2.

BEA ECONOMIC AREA 138 NEW ORLEANS, LA.

TABLE 2. POPULATION, AND EMPLOYMENT BY INDUSTRY, HISTORICAL AND PROJECTED, SELECTED YEARS, 1940-2020

	1940	1950	1960	1966	1980	1990	2000	2010	2020
POPULATION	1,305,128	1,529,418	1,884,489	2,092,280	2,460,700	2,804,500	3,153,000	3,558,700	4,012,700
EMPLOYMENT/POPULATION RATIO	.33	.35	.32	.34	.36	.36	.37	.38	.39
TOTAL EMPLOYMENT	431,096	530,342	608,608	715,262	888,500	1,014,100	1,181,900	1,358,100	1,546,000
AGRICULTURE, FORESTRY & FISHERIES	114,188	80,792	35,123	31,324	23,000	20,100	18,600	18,400	18,400
AGRICULTURE	108,634	74,657	31,307	26,491	17,600	14,500	12,900	12,600	12,600
FORESTRY & FISHERIES	5,554	6,135	3,816	4,833	5,400	5,600	5,700	5,800	5,800
MINING	3,487	9,211	18,393	23,556	24,000	24,400	24,700	24,900	24,900
CONTRACT CONSTRUCTION	22,275	38,840	48,619	85,309	83,600	93,200	106,100	118,600	131,400
MANUFACTURING	67,486	92,149	112,708	119,171	148,600	171,200	201,000	234,000	270,600
FOOD & KINDRED PRODUCTS	15,322	18,542	23,002	21,335	20,100	19,300	18,600	18,000	17,500
TEXTILE MILL PRODUCTS	3,476	2,217	1,144	864	600	500	400	300	300
APPAREL & OTHER FABRIC PRODUCTS	5,009	6,820	8,470	8,501	9,400	9,900	10,400	10,800	11,200
PRINTING & PUBLISHING	3,407	4,531	5,212	5,668	7,500	8,700	10,300	12,100	14,100
CHEMICALS & ALLIED PRODUCTS	4,111	6,763	12,591	12,950	22,500	30,700	41,600	54,400	69,200
LUMBER PRODUCTS & FURNITURE	14,896	18,811	13,054	8,980	8,400	8,200	8,100	7,900	7,800
MACHINERY, ALL	1,485	2,400	4,494	7,073	9,600	11,500	14,000	16,600	19,400
MACHINERY, EXCL. ELECTRICAL		2,069	3,360	5,049	6,800	8,100	9,900	11,700	13,600
ELEC. MACHINERY & SUPPLIES		331	1,134	2,024	2,800	3,400	4,100	4,900	5,700
TRANSPORTATION EQUIPMENT	2,224	4,132	6,758	13,434	20,500	25,200	31,300	37,700	44,700
MOTOR VEHICLES & EQUIPMENT	297	226	354	268	200	200	300	300	300
TRANS. EQUIP., EX. MTR. VEHS.	1,927	3,906	6,404	13,166	20,200	24,900	31,000	37,400	44,300
OTHER MANUFACTURING	17,556	27,933	37,983	40,366	49,700	56,700	65,900	75,600	86,200
PAPER & ALLIED PRODUCTS		7,749	9,422	8,671	10,900	12,400	14,500	16,600	18,900
PETROLEUM REFINING		10,698	11,663	9,127	8,800	8,600	8,400	8,300	8,200
PRIMARY METALS		1,107	3,941	4,462	4,400	4,400	4,500	4,500	4,500
FABRICATED METALS & ORDNANCE		2,945	5,074	9,469	14,200	17,800	22,500	27,700	33,400
MISCELLANEOUS MANUFACTURING		5,434	7,883	8,637	11,200	13,200	15,700	18,300	21,100
TRANS., COMM., & PUBLIC UTILITIES	35,624	52,362	59,215	67,693	82,900	91,200	102,600	113,700	125,200
TRANSPORTATION	28,298	39,058	42,101	50,180	60,400	65,500	72,700	79,700	86,800
RAILROAD TRANSPORTATION	9,161	11,521	8,482	6,564	5,900	5,300	4,800	4,300	3,800
TRUCKING & WAREHOUSING	5,059	5,546	8,306	9,332	11,800	13,700	16,200	18,700	21,300
OTHER TRANSPORTATION SERVICES	14,078	21,991	25,313	34,284	42,600	46,400	51,700	56,600	61,600
COMMUNICATIONS	3,461	6,087	7,507	7,782	10,600	12,400	14,700	17,000	19,500
UTILITIES (ELEC.,GAS,SANITARY)	3,865	7,217	9,607	9,731	11,800	13,200	15,100	16,900	18,800
WHOLESALE & RETAIL TRADE	70,571	106,685	124,949	136,761	173,100	196,300	227,600	259,600	293,100
FINANCE, INSURANCE & REAL ESTATE	10,757	15,295	25,204	30,117	40,600	46,900	54,900	63,000	71,400
SERVICES	92,605	107,776	151,034	183,957	257,900	306,500	368,900	434,500	503,600
BUSINESS SERVICES	64,153	62,698	76,731	82,024	94,200	98,400	105,800	113,200	121,300
LODGING PLACES & PERS. SERV.	16,081	17,827	20,684	22,495	26,900	28,100	30,200	32,100	34,200
BUSINESS & REPAIR SERVICES	6,548	11,392	15,061	23,187	32,200	39,200	47,700	56,300	65,000
AMUSEMENT & REC. SERVICES	3,956	5,771	4,633	4,588	6,100	6,800	7,700	8,700	9,500
PRIVATE HOUSEHOLDS	37,568	27,708	36,353	31,754	28,900	24,200	20,000	16,000	12,400
PROFESSIONAL SERVICES	28,452	45,078	74,303	101,933	163,700	208,000	263,100	321,200	382,200
GOVERNMENT	14,103	27,232	33,363	37,374	54,500	64,000	77,000	91,100	107,000
CIVILIAN GOVERNMENT	13,651	22,732	29,410	34,842	52,000	61,600	74,600	88,700	104,500
ARMED FORCES	452	4,500	3,953	2,532	2,400	2,400	2,400	2,400	2,400

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ECONOMIC AREA 139 - LAKE CHARLES, LA.

TABLE 1. POPULATION, EMPLOYMENT, PERSONAL INCOME, AND EARNINGS BY INDUSTRY, HISTORICAL AND PROJECTED, SELECTED YEARS, 1950 - 2020

	1950	1959	1962	1968	1969	1980	1990	2000	2010	2020
POPULATION, MIDYEAR	534,509	645,826	702,074	745,208	747,587	787,400	834,400	890,500	959,900	1,041,000
PER CAPITA INCOME (1967$)	1,258	1,609	1,701	2,341	2,354	3,361	4,482	6,121	8,233	11,064
PER CAPITA INCOME RELATIVE (US=1.00)	.61	.66	.66	.71	.69	.71	.73	.74	.76	.78
TOTAL EMPLOYMENT	162,484	195,256	211,127			276,400	293,200	320,200	350,400	384,000
EMPLOYMENT/POPULATION RATIO	.30	.30	.30			.35	.35	.36	.37	.37
EARNINGS PER WORKER (1967$)	3,232	4,294	4,430			7,504	9,903	13,111	17,258	22,820
EARNINGS PER WORKER RELATIVE(US=1.00)	.72	.80	.77			.80	.81	.83	.84	.86
				IN THOUSANDS OF 1967 $						
TOTAL PERSONAL INCOME	672,534	1,039,151	1,194,456	1,759,637	1,759,713	2,646,000	3,740,300	5,451,100	7,903,700	11,518,100
TOTAL EARNINGS	525,075	838,471	935,300	1,403,981	1,391,491	2,074,000	2,904,100	4,199,300	6,047,400	8,763,300
AGRICULTURE, FORESTRY & FISHERIES	123,233	94,356	106,162	143,142	95,737	122,400	131,700	156,400	204,100	273,700
AGRICULTURE	118,299	91,403	102,909	139,728	92,851	117,600	125,000	147,200	191,400	256,800
FORESTRY & FISHERIES	4,932	2,953	3,251	3,437	2,888	4,800	6,600	9,200	12,600	16,800
MINING	46,449	107,250	111,153	147,289	155,971	206,000	256,600	322,200	392,800	477,700
CRUDE PETROLEUM & NATURAL GAS	43,823	98,161	105,010	140,004	148,566	195,200	242,100	302,300	365,600	440,200
NONMETALLIC, EXCEPT FUELS	2,627	9,088	6,143	7,284	7,405	10,800	14,400	19,900	27,100	37,400
CONTRACT CONSTRUCTION	27,777	65,466	51,302	127,686	124,108	173,000	234,900	329,900	462,300	651,100
MANUFACTURING	83,817	112,253	124,900	184,850	189,150	283,000	400,700	586,000	847,900	1,236,000
FOOD & KINDRED PRODUCTS	22,746	23,313	26,751	33,029	32,213	39,900	47,000	57,200	69,900	87,400
TEXTILE MILL PRODUCTS	0	0	0	18	12	(S)	(S)	(S)	(S)	(S)
APPAREL & OTHER FABRIC PRODUCTS	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
LUMBER,PRODUCTS & FURNITURE	17,039	9,014	9,693	11,673	13,023	16,900	21,100	27,400	35,200	46,000
PAPER & ALLIED PRODUCTS	1,986	5,013	5,061	(D)	6,846	11,400	17,600	27,800	42,800	65,700
PRINTING & PUBLISHING	(D)	(D)	(D)	4,599	4,914	7,600	11,200	17,000	25,300	38,800
CHEMICALS & ALLIED PRODUCTS	15,889	25,421	28,339	39,883	42,844	68,500	101,000	152,300	225,700	332,000
PETROLEUM REFINING	20,175	33,403	35,215	54,184	51,601	72,500	98,200	135,400	183,000	250,700
PRIMARY METALS	0	0	0	15	(D)	(D)	(D)	(D)	(D)	(D)
FABRICATED METALS & ORDNANCE	31	2,124	2,948	5,420	5,141	10,600	18,800	33,700	57,900	96,900
MACHINERY, EXCLUDING ELECTRICAL		4,805	5,577	8,384	9,533	16,200	25,800	41,200	65,100	100,700
TOTAL MACHINERY (1950 ONLY)	1,534									
MOTOR VEHICLES & EQUIPMENT	0	0	0	80	69	(S)	(S)	(S)	(S)	(S)
TRANS, EQUIP., EXCL. MTR. VEHS.	809	1,698	3,806	13,863	14,646	25,100	38,300	59,800	91,200	138,500
OTHER MANUFACTURING	1,326	4,282	4,056	5,953	5,742	9,900	15,100	26,500	41,400	65,700
TRANS., COMM. & PUBLIC UTILITIES	32,091	65,096	64,777	88,311	93,650	148,000	221,500	341,800	521,500	794,900
RAILROAD TRANSPORTATION	14,510	13,375	11,803	10,515	9,914	11,700	13,000	14,500	15,900	17,600
TRUCKING & WAREHOUSING	5,459	10,418	8,513	12,256	13,879	20,900	29,900	43,900	64,300	95,200
OTHER TRANSPORTATION & SERVICES	3,503	15,582	18,030	33,586	34,223	64,000	104,600	173,400	279,800	446,200
COMMUNICATIONS	5,446	10,690	10,513	14,023	16,656	24,000	34,500	51,100	75,100	110,700
UTILITIES (ELEC.,GAS, SANITARY)	3,174	15,033	15,918	16,830	18,975	27,100	39,400	58,700	86,200	127,000
WHOLESALE & RETAIL TRADE	95,100	142,337	146,158	198,520	208,795	323,300	458,500	672,100	979,100	1,433,900
FINANCE, INSURANCE & REAL ESTATE	10,343	23,667	23,576	34,074	34,195	53,600	78,800	118,700	177,300	265,800
SERVICES	57,074	91,785	96,937	146,139	153,776	255,500	386,300	598,100	911,800	1,383,200
LODGING PLACES & PERSONAL SERV.	6,001	9,548	9,442	15,683	15,602	24,600	34,900	51,100	74,400	108,900
BUSINESS & REPAIR SERVICES	2,633	9,132	11,428	28,393	31,215	52,100	80,000	124,400	189,700	288,800
AMUSEMENT & RECREATION SERVICES	2,839	2,115	2,579	3,905	4,218	6,300	9,100	13,500	19,800	29,100
PRIVATE HOUSEHOLDS	19,054	28,314	27,831	22,077	22,674	26,000	28,500	32,100	35,900	41,200
PROFESSIONAL SERVICES	26,548	42,677	45,658	76,079	80,068	146,300	233,700	376,900	591,800	917,100
GOVERNMENT	49,190	136,261	210,333	334,051	336,110	508,700	734,900	1,073,600	1,550,300	2,244,500
CIVILIAN GOVERNMENT	45,626	90,894	107,573	162,469	167,740	301,900	466,600	725,000	1,099,300	1,658,500
FEDERAL GOVERNMENT	5,395	13,887	19,439	23,773	25,266	41,800	60,200	86,800	122,300	167,900
STATE & LOCAL GOVERNMENT	40,232	77,004	88,132	138,696	142,475	260,100	406,400	638,100	977,000	1,490,600
ARMED FORCES	3,564	45,369	102,761	171,582	168,369	206,700	268,200	348,500	451,000	585,900

POPULATION, APRIL 1, 1970 750,462

TABLE 2. POPULATION, AND EMPLOYMENT BY INDUSTRY, HISTORICAL AND PROJECTED, SELECTED YEARS, 1940-2020

	1940	1950	1960	1966	1980	1990	2000	2010	2020
POPULATION	464,393	531,839	655,695	734,250	787,400	834,400	890,500	959,900	1,041,000
EMPLOYMENT/POPULATION RATIO	.29	.31	.30	.34	.35	.35	.36	.37	.37
TOTAL EMPLOYMENT	136,104	162,484	195,256	246,340	276,400	293,200	320,200	350,400	384,000
AGRICULTURE, FORESTRY & FISHERIES	62,827	46,178	26,222	21,885	14,700	12,500	11,400	11,200	11,300
AGRICULTURE	61,013	44,011	25,134	20,506	13,100	10,700	9,500	9,300	9,300
FORESTRY & FISHERIES	1,814	2,167	1,083	1,379	1,600	1,700	1,800	1,900	2,000
MINING	5,288	8,216	13,525	16,570	16,100	15,800	15,600	15,300	15,000
CONTRACT CONSTRUCTION	5,636	12,348	16,779	17,677	19,600	20,800	22,800	24,800	27,000
MANUFACTURING	11,850	20,699	23,434	27,312	32,500	35,900	40,400	45,100	50,200
FOOD & KINDRED PRODUCTS	4,039	5,245	5,295	5,929	5,300	4,900	4,500	4,200	4,000
TEXTILE MILL PRODUCTS	27	68	30	31	(S)	(S)	(S)	(S)	(S)
APPAREL & OTHER FABRIC PRODUCTS	53	59	101	220	300	300	400	500	500
PRINTING & PUBLISHING	424	773	1,206	1,454	1,700	1,800	2,000	2,200	2,400
CHEMICALS & ALLIED PRODUCTS	1,163	3,246	4,373	5,390	7,300	8,500	10,100	11,700	13,300
LUMBER PRODUCTS & FURNITURE	4,887	4,908	2,545	2,378	2,200	2,100	2,100	2,000	2,000
MACHINERY, ALL	283	419	795	1,623	2,300	2,800	3,500	4,200	5,100
MACHINERY, EXCL. ELECTRICAL		394	702	1,474	2,000	2,500	3,100	3,800	4,500
ELEC. MACHINERY & SUPPLIES		25	93	149	200	200	300	400	500
TRANSPORTATION EQUIPMENT	153	366	762	2,601	3,500	3,900	4,500	5,100	5,700
MOTOR VEHICLES & EQUIPMENT	4	4	12		(S)	(S)	(S)	(S)	(S)
TRANS. EQUIP., EX. MTR. VEHS.	149	362	750	2,601	3,400	3,900	4,500	5,100	5,700
OTHER MANUFACTURING	821	5,615	8,329	7,686	9,700	11,200	12,900	14,800	16,700
PAPER & ALLIED PRODUCTS		685	1,243	961	1,200	1,400	1,700	2,000	2,300
PETROLEUM REFINING		3,975	5,134	4,607	5,500	6,200	6,800	7,500	8,200
PRIMARY METALS		131	95	99	(S)	(S)	(S)	(S)	(S)
FABRICATED METALS & ORDNANCE		162	643	976	1,400	1,800	2,300	2,800	3,400
MISCELLANEOUS MANUFACTURING		662	1,164	1,043	1,300	1,600	2,000	2,300	2,700
TRANS., COMM., & PUBLIC UTILITIES	5,924	10,654	14,449	18,617	24,000	27,400	31,900	36,700	41,800
TRANSPORTATION	4,595	7,222	8,952	11,205	14,700	16,900	19,900	23,000	26,400
RAILROAD TRANSPORTATION	2,082	2,914	2,021	1,596	1,100	900	800	700	600
TRUCKING & WAREHOUSING	1,032	1,423	2,152	1,728	2,300	2,600	3,000	3,400	3,800
OTHER TRANSPORTATION SERVICES	1,481	2,885	4,809	7,881	11,200	13,300	16,000	18,800	21,800
COMMUNICATIONS	594	1,281	2,114	2,204	2,800	3,000	3,400	3,800	4,300
UTILITIES (ELEC., GAS, SANITARY)	735	2,151	3,383	5,208	6,500	7,300	8,500	9,800	11,100
WHOLESALE & RETAIL TRADE	17,235	28,721	39,121	42,806	49,400	52,000	56,400	61,100	66,500
FINANCE, INSURANCE & REAL ESTATE	1,402	2,427	4,996	5,529	6,800	7,600	8,700	9,900	11,200
SERVICES	23,744	29,119	45,219	57,865	72,900	79,200	89,000	99,600	111,500
BUSINESS SERVICES	17,034	18,045	25,722	27,693	30,100	28,800	28,700	29,000	29,800
LODGING PLACES & PERS. SERV.	3,133	3,931	5,858	6,797	7,600	7,200	7,200	7,300	7,500
BUSINESS & REPAIR SERVICES	2,030	3,707	4,806	7,524	11,600	12,700	14,100	15,500	17,000
AMUSEMENT & REC. SERVICES	748	1,235	1,449	1,646	1,900	1,900	1,900	2,000	2,100
PRIVATE HOUSEHOLDS	11,123	9,172	13,609	11,726	8,800	6,900	5,400	4,100	3,100
PROFESSIONAL SERVICES	6,710	11,074	19,497	30,172	42,700	50,400	60,200	70,500	81,600
GOVERNMENT	2,198	4,122	11,508	38,079	40,000	41,500	43,700	46,200	49,100
CIVILIAN GOVERNMENT	2,198	3,982	6,281	7,563	10,500	12,100	14,300	16,800	19,700
ARMED FORCES		140	5,227	30,516	29,400	29,400	29,400	29,400	29,400

ECONOMIC AREA 140 - BEAUMONT-PORT ARTHUR-ORANGE, TEX.

TABLE 1. POPULATION, EMPLOYMENT, PERSONAL INCOME, AND EARNINGS BY INDUSTRY, HISTORICAL AND PROJECTED, SELECTED YEARS, 1950 - 2020

	1950	1959	1962	1968	1969	1980	1990	2000	2010	2020
POPULATION, MIDYEAR	299,857	366,967	389,881	389,319	394,710	463,100	545,400	630,100	734,500	860,400
PER CAPITA INCOME (1967$)	1,812	2,207	2,245	2,980	3,062	4,339	5,628	7,661	10,173	13,453
PER CAPITA INCOME RELATIVE (US=1.00)	.88	.90	.87	.90	.90	.91	.91	.92	.93	.94
TOTAL EMPLOYMENT	106,986	126,399	126,917			173,300	203,200	243,800	289,000	341,100
EMPLOYMENT/POPULATION RATIO	.36	.34	.33			.37	.37	.39	.39	.40
EARNINGS PER WORKER (1967$)	4,217	5,296	5,664			9,259	11,917	15,459	20,001	26,062
EARNINGS PER WORKER RELATIVE (US=1.00)	.94	.99	.98			.99	.98	.98	.98	.98
				IN THOUSANDS OF 1967 $						
TOTAL PERSONAL INCOME	543,416	809,828	875,332	1,160,048	1,208,538	2,009,500	3,069,500	4,827,900	7,472,400	11,579,000
TOTAL EARNINGS	451,146	669,470	718,906	944,832	989,100	1,605,200	2,422,600	3,769,900	5,781,600	8,890,300
AGRICULTURE, FORESTRY & FISHERIES	14,078	14,443	13,880	7,219	6,655	9,200	10,900	13,400	17,600	23,700
AGRICULTURE	13,024	13,339	12,635	6,260	5,751	7,700	8,800	10,400	13,600	18,300
FORESTRY & FISHERIES	1,054	1,106	1,245	959	901	1,500	2,100	2,900	4,000	5,400
MINING	14,920	39,740	28,111	23,030	(D)	26,300	30,500	36,300	42,500	50,400
CRUDE PETROLEUM & NATURAL GAS	(D)	(D)	(D)	(D)	(D)	22,300	25,200	29,000	32,500	36,400
NONMETALLIC, EXCEPT FUELS	(D)	(D)	(D)	(D)	(D)	4,000	5,300	7,300	10,000	13,100
CONTRACT CONSTRUCTION	31,631	48,775	57,260	77,171	84,312	128,400	188,500	285,700	427,400	640,200
MANUFACTURING	172,488	244,356	278,970	386,671	413,605	626,300	903,400	1,347,500	1,991,800	2,965,300
FOOD & KINDRED PRODUCTS	8,100	8,501	8,208	8,083	7,442	10,900	14,900	20,800	29,000	41,000
TEXTILE MILL PRODUCTS	(D)	(D)	(D)	0	0	(S)	(S)	(S)	(S)	(S)
APPAREL & OTHER FABRIC PRODUCTS	(D)	(D)	(D)	157	140	(S)	(S)	(S)	(S)	(S)
LUMBER PRODUCTS & FURNITURE	13,838	10,538	10,958	15,839	16,352	23,900	32,600	45,800	63,500	88,700
PAPER & ALLIED PRODUCTS	2,317	7,795	8,953	15,083	19,849	31,700	46,900	71,500	106,900	159,300
PRINTING & PUBLISHING	2,596	3,503	3,779	4,575	(D)	8,000	12,500	20,100	31,700	50,700
CHEMICALS & ALLIED PRODUCTS	20,777	46,802	70,426	87,870	95,918	178,000	295,700	496,100	807,800	1,297,100
PETROLEUM REFINING	102,014	129,634	133,441	177,097	183,125	231,300	287,700	367,400	463,500	596,100
PRIMARY METALS	(D)	(D)	(D)	(D)	4,295	5,300	6,500	8,000	9,900	12,400
FABRICATED METALS & ORDNANCE	4,071	10,588	17,752	19,900	21,586	36,000	54,400	83,400	125,300	186,900
MACHINERY, EXCLUDING ELECTRICAL		4,704	5,426	8,059	(D)	15,100	22,600	35,200	52,900	79,300
ELECTRICAL MACHINERY & SUPPLIES		(D)	(D)	(D)	(D)	1,000	1,600	2,600	4,000	6,100
TOTAL MACHINERY (1950 ONLY)	2,993									
MOTOR VEHICLES & EQUIPMENT	119	163	149	138	157	(S)	(S)	(S)	(S)	(S)
TRANS. EQUIP., EXCL. MTR. VEHS.	10,895	15,393	13,051	(D)	(D)	73,400	111,000	171,300	259,600	390,900
OTHER MANUFACTURING	3,212	4,591	4,191	10,703	6,383	10,500	15,700	23,900	35,900	53,600
TRANS., COMM. & PUBLIC UTILITIES	45,011	67,268	67,953	82,454	83,689	128,300	181,000	264,700	382,600	556,100
RAILROAD TRANSPORTATION	7,684	8,699	7,886	7,440	6,875	8,800	10,500	12,700	14,900	17,500
TRUCKING & WAREHOUSING	2,935	5,173	5,496	9,299	9,841	16,000	24,700	39,100	61,100	95,500
OTHER TRANSPORTATION & SERVICES	23,286	34,089	32,858	40,536	40,249	62,900	87,600	126,000	178,300	252,600
COMMUNICATIONS	4,974	7,548	7,203	9,234	10,622	16,800	26,300	42,200	66,400	104,400
UTILITIES (ELEC.,GAS, SANITARY)	6,135	11,759	14,511	15,944	16,103	23,500	31,700	44,500	61,700	85,900
WHOLESALE & RETAIL TRADE	74,397	102,915	104,844	125,543	128,824	219,900	340,200	542,700	850,000	1,332,100
FINANCE, INSURANCE & REAL ESTATE	11,934	21,890	22,280	30,785	(D)	51,100	79,600	127,300	200,000	314,300
SERVICES	50,000	68,941	77,407	113,008	116,614	214,000	349,900	581,900	941,400	1,508,200
LODGING PLACES & PERSONAL SERV.	7,252	10,364	11,162	15,150	15,673	26,100	38,900	59,600	90,300	137,200
BUSINESS & REPAIR SERVICES	3,093	6,256	7,558	19,004	18,164	33,500	56,200	95,500	157,100	255,100
AMUSEMENT & RECREATION SERVICES	3,703	2,963	3,330	2,593	2,286	3,800	5,900	9,500	15,100	23,800
PRIVATE HOUSEHOLDS	15,400	12,852	13,070	10,218	10,529	13,300	16,100	19,800	24,000	29,700
PROFESSIONAL SERVICES	20,553	36,506	42,289	66,040	69,962	137,000	232,700	397,300	654,800	1,062,300
GOVERNMENT	36,682	61,146	68,198	98,954	103,259	201,400	338,100	570,000	927,900	1,499,500
CIVILIAN GOVERNMENT	29,945	49,529	59,495	91,843	96,198	192,700	326,900	555,400	909,000	1,475,000
FEDERAL GOVERNMENT	9,007	8,456	9,166	13,294	13,344	24,500	38,600	60,700	91,300	135,100
STATE & LOCAL GOVERNMENT	20,936	41,075	50,330	78,549	82,855	168,200	288,300	494,700	817,600	1,339,900
ARMED FORCES	6,739	11,617	8,703	7,111	7,061	8,600	11,200	14,600	18,900	24,300

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POPULATION, APRIL 1, 1970 394,705

BEA ECONOMIC AREA 140 BEAUMONT-PORT ARTHUR-ORANGE, TEX.

TABLE 2. POPULATION, AND EMPLOYMENT BY INDUSTRY, HISTORICAL AND PROJECTED, SELECTED YEARS, 1940-2020

	1940	1950	1960	1966	1980	1990	2000	2010	2020
POPULATION	221,725	297,358	373,783	384,387	463,100	545,400	630,100	734,500	860,600
EMPLOYMENT/POPULATION RATIO	.33	.36	.34	.36	.37	.37	.39	.39	.40
TOTAL EMPLOYMENT	72,937	106,986	126,399	138,469	173,300	203,200	243,800	289,000	341,100
AGRICULTURE, FORESTRY & FISHERIES	7,427	4,905	2,974	2,475	1,700	1,500	1,400	1,400	1,400
AGRICULTURE	7,244	4,577	2,674	2,093	1,200	1,000	900	900	900
FORESTRY & FISHERIES	183	328	300	382	400	400	400	500	500
MINING	1,605	2,332	2,918	2,824	2,300	2,100	1,900	1,700	1,600
CONTRACT CONSTRUCTION	4,075	9,412	10,474	13,728	13,000	15,100	18,000	21,100	24,700
MANUFACTURING	22,205	33,280	39,386	45,387	56,600	65,500	77,000	89,700	103,700
FOOD & KINDRED PRODUCTS	1,186	1,286	1,816	1,621	1,400	1,500	1,600	1,700	1,900
TEXTILE MILL PRODUCTS	8	34	8	10	(S)	(S)	(S)	(S)	(S)
APPAREL & OTHER FABRIC PRODUCTS	26	31	52	55	(S)	(S)	(S)	(S)	(S)
PRINTING & PUBLISHING	534	850	1,052	1,160	1,500	1,700	2,000	2,400	2,900
CHEMICALS & ALLIED PRODUCTS	129	2,974	6,109	9,932	16,100	21,000	27,500	34,700	42,800
LUMBER PRODUCTS & FURNITURE	5,583	5,917	4,044	4,815	4,400	4,200	4,100	4,000	3,900
MACHINERY, ALL	368	503	1,441	1,876	2,500	2,900	3,600	4,200	4,800
MACHINERY, EXCL. ELECTRICAL		419	1,319	1,279	1,600	1,900	2,300	2,700	3,100
ELEC. MACHINERY & SUPPLIES		84	122	597	800	1,000	1,200	1,400	1,600
TRANSPORTATION EQUIPMENT	853	1,371	1,865	3,365	5,500	7,000	9,100	11,300	13,800
MOTOR VEHICLES & EQUIPMENT	48	54	20	21	(S)	(S)	(S)	(S)	(S)
TRANS. EQUIP., EX. MTR. VEHS.	805	1,317	1,845	3,344	5,500	7,000	9,000	11,300	13,800
OTHER MANUFACTURING	13,518	20,314	22,999	22,553	24,900	26,700	28,800	31,000	33,200
PAPER & ALLIED PRODUCTS		508	1,206	1,663	2,400	3,000	3,700	4,600	5,600
PETROLEUM REFINING		16,862	18,727	17,222	17,800	18,200	18,600	19,000	19,300
PRIMARY METALS		454	802	327	300	300	400	400	400
FABRICATED METALS & ORDNANCE		1,656	1,408	2,271	3,100	3,700	4,400	5,200	6,000
MISCELLANEOUS MANUFACTURING		834	856	1,070	1,200	1,300	1,500	1,600	1,800
TRANS., COMM., & PUBLIC UTILITIES	6,119	9,089	9,100	9,546	11,700	13,300	15,400	17,600	20,100
TRANSPORTATION	4,560	5,806	5,447	5,528	6,800	7,700	8,900	10,100	11,500
RAILROAD TRANSPORTATION	1,101	1,414	1,275	1,124	800	700	700	700	600
TRUCKING & WAREHOUSING	1,135	940	1,317	1,307	1,800	2,200	2,700	3,200	3,900
OTHER TRANSPORTATION SERVICES	2,324	3,452	2,855	3,097	4,100	4,600	5,400	6,100	6,900
COMMUNICATIONS	604	1,292	1,235	1,450	1,800	2,200	2,700	3,300	3,900
UTILITIES (ELEC., GAS, SANITARY)	955	1,991	2,418	2,568	3,000	3,300	3,700	4,100	4,700
WHOLESALE & RETAIL TRADE	12,703	21,471	25,205	24,891	31,700	36,600	43,500	51,000	59,600
FINANCE, INSURANCE & REAL ESTATE	1,560	2,650	4,034	4,000	5,300	6,400	8,000	9,700	11,700
SERVICES	15,777	19,960	27,254	30,834	43,300	53,100	66,500	81,700	99,300
BUSINESS SERVICES	11,617	12,454	13,958	14,525	15,900	17,000	19,000	21,100	23,700
LODGING PLACES & PERS. SERV.	3,374	4,010	4,669	4,254	5,200	5,600	6,200	6,800	7,500
BUSINESS & REPAIR SERVICES	1,230	2,014	2,745	4,104	5,300	6,600	8,400	10,300	12,500
AMUSEMENT & REC. SERVICES	661	922	851	878	800	900	1,100	1,200	1,400
PRIVATE HOUSEHOLDS	6,352	5,508	5,693	5,289	4,400	3,800	3,200	2,700	2,100
PROFESSIONAL SERVICES	4,160	7,506	13,296	16,309	27,300	36,000	47,500	60,500	75,600
GOVERNMENT	1,466	3,887	5,054	4,784	7,400	9,200	11,800	14,800	18,600
CIVILIAN GOVERNMENT	1,440	2,971	3,637	4,505	7,100	9,000	11,500	14,500	18,300
ARMED FORCES	26	916	1,417	279	200	200	200	200	200

ECONOMIC AREA 141 - HOUSTON, TEX.

TABLE 1. POPULATION, EMPLOYMENT, PERSONAL INCOME, AND EARNINGS BY INDUSTRY, HISTORICAL AND PROJECTED, SELECTED YEARS, 1950 - 2020

	1950	1959	1962	1968	1969	1980	1990	2000	2010	2020
POPULATION, MIDYEAR	1,257,035	1,726,229	1,912,731	2,277,747	2,315,556	2,899,800	3,570,200	4,247,600	5,071,200	6,033,600
PER CAPITA INCOME (1967$)	2,292	2,487	2,472	3,146	3,270	4,499	5,741	7,753	10,190	13,317
PER CAPITA INCOME RELATIVE (US=1.00)	1.11	1.02	.96	.95	.96	.94	.93	.94	.94	.93
TOTAL EMPLOYMENT	485,199	644,796	667,350			1,109,400	1,351,400	1,673,200	2,027,900	2,423,800
EMPLOYMENT/POPULATION RATIO	.39	.37	.35			.38	.38	.39	.40	.40
EARNINGS PER WORKER (1967$)	4,944	5,514	5,830			9,505	12,087	15,493	19,848	25,590
EARNINGS PER WORKER RELATIVE(US=1.00)	1.10	1.03	1.01			1.01	.99	.98	.97	.96
					IN THOUSANDS OF 1967 $					
TOTAL PERSONAL INCOME	2,881,318	4,293,045	4,727,480	7,166,421	7,571,337	13,045,500	20,495,700	32,930,000	51,678,100	80,352,500
TOTAL EARNINGS	2,398,892	3,555,521	3,890,858	5,909,203	6,305,885	10,545,000	16,335,400	25,923,500	40,251,300	62,027,200
AGRICULTURE, FORESTRY & FISHERIES	114,457	93,298	100,619	90,828	88,827	99,000	109,200	131,600	169,400	227,200
AGRICULTURE	110,718	90,780	97,821	88,523	86,660	95,600	104,800	125,900	161,900	217,600
FORESTRY & FISHERIES	3,740	2,517	2,799	2,303	2,167	3,300	4,300	5,700	7,400	9,500
MINING	258,225	312,953	293,491	310,518	345,395	409,800	468,900	546,500	623,700	715,900
COAL	321	0	0	0	0	(S)	(S)	(S)	(S)	(S)
CRUDE PETROLEUM & NATURAL GAS	238,304	287,104	276,084	292,398	327,201	384,200	435,900	502,300	565,100	637,000
NONMETALLIC, EXCERT FUELS	19,600	25,846	17,408	18,171	18,197	25,600	33,000	44,100	58,500	78,800
CONTRACT CONSTRUCTION	219,457	231,469	314,333	594,760	633,926	991,000	1,487,000	2,288,500	3,427,700	5,091,500
MANUFACTURING	479,013	843,256	906,501	1,389,479	1,491,313	2,427,300	3,673,700	5,698,900	8,685,600	13,221,100
FOOD & KINDRED PRODUCTS	56,878	77,571	83,051	107,679	113,509	161,800	215,600	293,500	393,600	532,200
TEXTILE MILL PRODUCTS	(D)	(D)	(D)	(D)	(D)	6,000	7,200	9,000	11,200	14,100
APPAREL & OTHER FABRIC PRODUCTS	6,781	7,138	8,110	8,319	(D)	11,500	14,200	17,900	22,600	29,000
LUMBER PRODUCTS & FURNITURE	32,363	26,352	27,591	38,447	38,173	52,300	68,100	91,300	121,500	163,700
PAPER & ALLIED PRODUCTS	(D)	(D)	(D)	28,749	30,178	47,900	71,000	107,700	160,600	239,000
PRINTING & PUBLISHING	22,531	34,129	38,410	55,977	61,068	100,700	156,000	246,900	382,000	590,800
CHEMICALS & ALLIED PRODUCTS	82,288	171,346	207,196	305,500	324,543	585,500	949,700	1,560,500	2,494,000	3,939,700
PETROLEUM REFINING	94,010	164,320	137,940	197,602	211,430	279,000	359,300	473,200	613,900	810,000
PRIMARY METALS	27,710	44,882	56,984	82,652	85,410	121,200	164,100	224,700	300,300	403,600
FABRICATED METALS & ORDNANCE	35,160	75,927	91,132	159,167	168,527	299,600	473,200	759,600	1,187,400	1,836,300
MACHINERY, EXCLUDING ELECTRICAL		134,415	137,224	207,706	237,684	389,900	595,100	926,900	1,413,300	2,140,200
ELECTRICAL MACHINERY & SUPPLIES		9,493	11,150	(D)	27,321	58,700	108,900	201,100	355,900	616,800
TOTAL MACHINERY (1950 ONLY)	76,846									
MOTOR VEHICLES & EQUIPMENT	1,699	2,557	4,296	9,124	9,024	13,500	19,400	28,700	41,900	61,300
TRANS. EQUIP., EXCL. MTR. VEHS.	9,039	15,173	17,305	58,163	52,689	91,000	140,200	220,700	338,800	518,200
OTHER MANUFACTURING	14,325	51,979	57,904	100,547	118,277	207,700	331,100	536,500	847,800	1,325,400
TRANS., COMM. & PUBLIC UTILITIES	258,966	372,411	383,692	509,116	528,155	807,200	1,152,300	1,694,800	2,459,100	3,571,500
RAILROAD TRANSPORTATION	75,231	75,003	67,961	55,180	53,934	70,500	85,100	103,200	120,300	140,100
TRUCKING & WAREHOUSING	36,232	62,305	70,120	114,218	116,167	181,400	258,100	378,100	546,600	788,100
OTHER TRANSPORTATION & SERVICES	84,860	119,463	121,966	158,917	160,446	246,900	344,500	495,500	702,800	996,500
COMMUNICATIONS	28,346	43,608	49,499	72,352	82,645	132,800	209,600	337,900	531,200	827,200
UTILITIES (ELEC.,GAS, SANITARY)	34,294	72,030	74,143	108,452	114,967	175,300	254,800	380,000	558,000	819,400
WHOLESALE & RETAIL TRADE	503,445	721,907	771,116	1,191,629	1,268,463	2,192,800	3,443,400	5,520,900	8,634,800	13,356,100
FINANCE, INSURANCE & REAL ESTATE	127,674	204,027	218,200	340,557	359,371	586,100	885,900	1,368,700	2,069,700	3,107,600
SERVICES	274,459	467,699	537,714	930,097	1,013,299	1,875,500	3,122,300	5,238,200	8,483,100	13,465,600
LODGING PLACES & PERSONAL SERV.	44,480	60,990	67,937	112,563	116,577	197,000	296,600	458,300	694,900	1,047,700
BUSINESS & REPAIR SERVICES	27,223	68,922	86,344	183,302	206,120	369,700	608,100	1,011,600	1,629,000	2,578,700
AMUSEMENT & RECREATION SERVICES	10,285	16,635	20,770	28,772	31,591	51,800	79,400	124,700	191,200	291,100
PRIVATE HOUSEHOLDS	63,948	74,930	76,118	64,878	66,845	87,500	108,100	135,900	166,600	206,600
PROFESSIONAL SERVICES	128,524	246,224	286,544	540,583	592,163	1,169,200	2,029,900	3,507,500	5,801,200	9,341,400
GOVERNMENT	163,197	308,507	365,194	552,299	577,130	1,156,000	1,992,200	3,435,000	5,697,800	9,270,300
CIVILIAN GOVERNMENT	137,107	275,282	332,808	515,826	539,750	1,110,000	1,932,600	3,357,500	5,597,500	9,140,000
FEDERAL GOVERNMENT	43,937	64,605	84,339	146,249	150,749	273,800	429,000	673,100	1,003,900	1,442,900
STATE & LOCAL GOVERNMENT	93,172	210,676	248,471	369,579	388,999	836,100	1,503,500	2,684,300	4,593,600	7,697,000
ARMED FORCES	26,090	33,225	32,383	36,469	37,383	45,900	59,600	77,500	100,300	130,300

POPULATION, APRIL 1, 1970 2,362,757

BEA ECONOMIC AREA 141 HOUSTON, TEX.

TABLE 2. POPULATION, AND EMPLOYMENT BY INDUSTRY, HISTORICAL AND PROJECTED, SELECTED YEARS, 1940-2020

	1940	1950	1960	1966	1980	1990	2000	2010	2020
POPULATION	931,165	1,246,559	1,758,251	2,116,327	2,899,800	3,570,200	4,247,600	5,071,200	6,033,600
EMPLOYMENT/POPULATION RATIO	.38	.39	.37	.38	.38	.38	.39	.40	.40
TOTAL EMPLOYMENT	351,931	485,199	644,796	795,709	1,109,400	1,351,400	1,673,200	2,027,900	2,423,800
AGRICULTURE, FORESTRY & FISHERIES	62,901	40,073	29,929	24,856	16,000	13,300	12,000	11,700	11,800
AGRICULTURE	62,201	39,091	29,328	24,095	15,200	12,400	11,100	10,800	10,800
FORESTRY & FISHERIES	700	982	601	761	800	800	900	900	900
MINING	12,203	16,052	20,644	24,828	22,800	21,700	20,700	19,800	18,900
CONTRACT CONSTRUCTION	22,247	45,648	50,935	80,166	103,100	122,200	147,500	172,800	200,000
MANUFACTURING	56,585	97,280	136,335	166,438	230,900	280,100	342,900	411,300	486,500
FOOD & KINDRED PRODUCTS	7,761	10,237	13,704	14,490	17,100	18,200	19,300	20,300	21,200
TEXTILE MILL PRODUCTS	1,156	1,269	1,045	864	700	700	700	600	600
APPAREL & OTHER FABRIC PRODUCTS	1,305	1,843	1,971	1,888	1,700	1,600	1,500	1,400	1,400
PRINTING & PUBLISHING	3,834	5,527	7,997	9,348	13,000	15,700	19,200	23,000	27,300
CHEMICALS & ALLIED PRODUCTS	1,536	10,865	23,864	32,024	51,400	66,700	86,600	108,900	133,500
LUMBER PRODUCTS & FURNITURE	7,753	9,807	6,711	6,069	6,100	6,200	6,400	6,500	6,600
MACHINERY, ALL	9,235	12,160	23,471	33,206	48,300	60,500	76,400	93,500	112,200
MACHINERY, EXCL. ELECTRICAL		11,188	20,450	24,384	34,600	42,800	53,500	64,900	77,500
ELEC. MACHINERY & SUPPLIES		972	3,021	8,822	13,600	17,700	22,800	28,500	34,600
TRANSPORTATION EQUIPMENT	2,120	2,336	3,585	5,829	9,100	11,500	14,600	17,900	21,600
MOTOR VEHICLES & EQUIPMENT	410	571	657	869	1,100	1,300	1,600	1,900	2,200
TRANS. EQUIP., EX. MTR. VEHS.	1,710	1,765	2,928	4,960	8,000	10,100	12,900	16,000	19,300
OTHER MANUFACTURING	21,885	43,236	54,088	62,720	83,000	98,600	117,900	138,800	161,700
PAPER & ALLIED PRODUCTS		2,176	3,565	3,654	4,700	5,500	6,500	7,600	8,700
PETROLEUM REFINING		23,697	21,661	16,412	19,000	20,800	22,600	24,400	26,100
PRIMARY METALS		6,555	7,977	10,579	11,500	12,300	13,100	13,800	14,400
FABRICATED METALS & ORDNANCE		6,099	11,601	20,015	29,000	35,500	44,000	53,100	62,900
MISCELLANEOUS MANUFACTURING		4,709	9,880	12,060	18,600	24,200	31,500	39,800	49,400
TRANS., COMM., & PUBLIC UTILITIES	32,956	49,399	59,601	67,021	85,000	97,300	113,600	130,500	148,600
TRANSPORTATION	26,308	34,618	39,665	40,897	48,700	53,800	60,700	67,600	74,700
RAILROAD TRANSPORTATION	10,105	13,400	10,986	8,820	7,200	6,900	6,500	6,100	5,600
TRUCKING & WAREHOUSING	5,970	6,784	11,987	12,799	16,300	18,900	22,200	25,600	29,200
OTHER TRANSPORTATION SERVICES	10,233	14,434	16,692	19,278	25,000	28,000	32,000	35,800	39,700
COMMUNICATIONS	2,595	6,481	7,219	10,083	14,600	17,700	21,900	26,300	31,100
UTILITIES (ELEC.,GAS,SANITARY)	4,053	8,300	12,617	16,041	21,600	25,700	30,900	36,600	42,700
WHOLESALE & RETAIL TRADE	65,687	103,431	141,934	163,567	235,400	289,200	359,900	437,300	523,800
FINANCE, INSURANCE & REAL ESTATE	11,935	18,582	30,925	38,540	53,800	64,000	77,400	91,400	106,700
SERVICES	78,940	97,704	152,341	203,822	318,700	409,300	528,200	662,400	813,200
BUSINESS SERVICES	57,301	59,298	76,179	91,084	114,700	129,700	150,300	172,200	196,400
LODGING PLACES & PERS. SERV.	15,926	19,430	23,008	28,436	33,400	36,700	41,400	46,200	51,300
BUSINESS & REPAIR SERVICES	7,186	11,989	18,792	28,454	45,800	58,800	75,800	94,300	114,600
AMUSEMENT & REC. SERVICES	3,052	3,795	4,935	6,815	9,100	10,400	12,200	14,000	15,900
PRIVATE HOUSEHOLDS	31,137	24,084	29,444	27,379	26,200	23,500	20,600	17,500	14,400
PROFESSIONAL SERVICES	21,639	38,406	76,162	112,738	204,900	279,600	377,900	490,100	616,800
GOVERNMENT	8,477	17,030	22,091	26,471	42,300	54,100	70,600	90,300	114,100
CIVILIAN GOVERNMENT	7,369	13,573	19,992	24,840	40,800	52,500	69,000	88,800	112,500
ARMED FORCES	1,108	3,457	2,099	1,631	1,500	1,500	1,500	1,500	1,500

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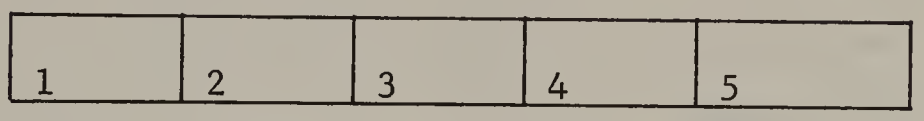
ATTACHMENT H

MATRIX APPENDIX

ATTACHMENT H

MATRIX ANALYSES

The following contains a presentation of a matrix table for each individual tract proposed for leasing in this sale. The following code will appear at the top of each matrix table and should be translated in accordance with the following.



1. Leasing Area

WC = West Cameron

WCW = West Cameron - West Addition

WCS = West Cameron - East Addition

EC = East Cameron

ECS = East Cameron - South Addition

V = Vermilion

VS = Vermilion - South Addition

SMS = South Marsh Island - South Addition

SMN = South Marsh Island - North Addition

E = Eugene Island

ES = Eugene Island - South Addition

SS = Ship Shoal

SSS = Ship Shoal - South Addition

ST = South Timbalier

STS = South Timbalier - South Addition

SPL = South Pelto

G = Grand Isle

GS = Grand Isle - South Addition

WD = West Delta

SP = South Pass

SPSE = South Pass - South and East Addition

MP = Main Pass

MPSE = Main Pass - South and East Addition

GB = Garden Banks

NO S-1 = New Orleans South No. 1

NO = New Orleans

MS - 2 = Mobile South No. 2

MS - 1 = Mobile South No. 1

2. Tract Number

3. Approximate statute miles from tract to shore or nearest island

4. Approximate water depth of tract in meters

5. Estimated type of production

O = Oil G = Gas O & G = Oil and Gas

In addition, the following legend will explain the letter headings for columns within each matrix table:

IM = Importance

PR = Proximity

F (ST) = Impact Factor - Structures

F (OS) = Impact Factor - Oil Spills

NA = Not Applicable

NCG = Not Computed, Gas tract

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WC | 1 | 4 | 8 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.4	16	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0.0	20		
Outdoor Recreation	40	0.4	16	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC | 2 | 4 | 8 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.4	16	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.4	16	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC | 3 | 6 | 7 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC | 4 | 7 | 7 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WC 5 6 8 G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC 6 7 8 G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

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WC 7 7 8 G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC 8 6 8 G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

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SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC | 10 | 10 | 9 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC | 11 | 10 | 9 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC | 12 | 10 | 9 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WC	13	9	7	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC	14	9	7	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

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WC	15	10	11	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC	16	18	10	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

* Snapper Grouper LAMK

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WC	17	18	10	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

WC	18	18	10	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

WC	19	24	12	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

* Snapper grouper bank

WC	20	30	12	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WC	21	35	12	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC	22	34	15	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC	23	40	18	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC	24	41	19	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WC	25	45	21	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC	26	44	19	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC	27	46	19	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WC	28	47	19	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WC	29	61	24	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW	30	48	19	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

283

WCW	31	51	19	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW	32	52	19	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WCW | 33 | 50 | 21 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW | 34 | 54 | 21 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40			80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW | 35 | 57 | 22 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW | 36 | 57 | 22 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WCW	37	59	22	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW	38	59	22	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

0278

WCW	39	69	24	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW	40	69	24	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WCW | 41 | 71 | 27 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW | 42 | 71 | 27 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW | 43 | 73 | 30 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW | 44 | 73 | 30 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WCW | 45 | 73 | 30 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCW | 46 | 77 | 30 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS | 47 | 78 | 37 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS | 48 | 79 | 36 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WCS	49	79	36	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS	50	74	36	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS	51	74	36	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS	52	77	38	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WCS | 53 | 82 | 39 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS | 54 | 90 | 45 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

678

WCS | 55 | 83 | 48 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS | 56 | 86 | 51 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WCS	57	88	53	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS	58	91	54	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

Q12

WCS	59	98	60	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS	60	95	60	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WCS | 61 | 93 | 60 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS | 62 | 111 | 82 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS | 63 | 114 | 105 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

WCS | 64 | 117 | 117 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

EC	65	9	11	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

EC	66	5	9	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

EC	67	5	9	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

EC	68	8	11	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

EC	69	11	12	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

EC	70	8	12	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

812

EC	71	9	14	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

EC	72	11	13	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

EC | 73 | 12 | 13 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

EC | 74 | 67 | 30 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

EC | 75 | 69 | 36 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ECS | 76 | 68 | 36 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

ECS | 77 | 68 | 36 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ECS | 78 | 70 | 36 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

082

ECS | 79 | 70 | 36 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ECS | 80 | 72 | 36 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

ECS | 81 | 75 | 39 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ECS | 82 | 78 | 42 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ECS | 83 | 88 | 53 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

V | 84 | 6 | 11 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

V | 85 | 6 | 9 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

V | 86 | 5 | 7 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.4	8	100		NCG
Unique & Highly Productive Areas	20	0.4	8	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

282

V | 87 | 5 | 4 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.4	8	100		NCG
Unique & Highly Productive Areas	20	0.4	8	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

V | 88 | 7 | 4 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

V	89	10	12	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

V	90	13	8	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

V	91	14	12	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

V	92	14	13	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

V	93	18	14	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

V	94	16	10	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

5283

V	95	37	22	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

V	96	41	24	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

V	97	66	39	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

VS	98	81	60	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

VS	99	81	60	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

VS	100	82	60	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

VS	101	85	64	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

VS	102	85	64	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

982

VS	103	87	67	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

VS	104	87	67	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

VS	105	91	70	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

VS	106	91	70	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

282

VS	107	95	82	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

VS	108	99	91	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SMS | 109 | 70 | 48 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

SMS | 110 | 73 | 51 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

SMS | 111 | 73 | 51 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

SMS | 112 | 74 | 51 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SMS	113	76	54	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

SMS	114	76	54	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

383

SMS	115	76	54	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

SMS	116	79	57	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SMS	117	80	57	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

SMS	118	82	60	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

SMS	119	85	67	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

SMS	120	91	82	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SMS	121	93	82	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

SMS	122	96	86	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.8	16
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

SMS	123	99	100	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

SMS	124	99	100	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SMN	125	17	6	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.5	50
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

SMN	126	19	6	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.5	50
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

292

SMN	127	24	6	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	1.0	80	80	0.6	48
Sport Fishing	0	0.0	0	80	0.6	48
Ordnance Disposal Area	100	NA		0		

SMN	128	26	9	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	1.0	80	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

E	129	6	5	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.4	8	100	1.0	100
Unique & Highly Productive Areas	20	0.4	8	100	1.0	100
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.4	32
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

E	130	9	6	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100	0.9	90
Unique & Highly Productive Areas	20	0.2	4	100	0.9	90
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.4	32
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

E	131	5	6	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.1	10
Unique & Highly Productive Areas	20	0.2	4	100	0.8	80
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.1	8
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

E	132	4	5	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

E | 133 | 11 | 7 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

E | 134 | 10 | 6 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

E | 135 | 11 | 7 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

E | 136 | 54 | 39 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

E	137	55	39	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

E	138	55	42	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

53

ES	139	66	54	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ES	140	59	54	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.1	2
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

ES | 141 | 59 | 57 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.1	2
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ES | 142 | 66 | 57 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40			80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

052

ES | 143 | 67 | 57 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40			80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ES | 144 | 62 | 64 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.2	4
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

ES	145	69	67	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ES	146	69	70	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

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ES	147	68	73	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ES	148	68	73	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

ES	149	70	76	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.4	8
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ES	150	70	76	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.4	8
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ES	151	72	73	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.4	8
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ES	152	72	73	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.4	8
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

ES	153	72	82	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.5	10
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ES	154	72	82	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.5	10
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

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ES	155	86	92	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.8	16
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ES	156	86	91	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.8	16
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SS | 157 | 7 | 7 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.4	16	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.4	16	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

SS | 158 | 9 | 6 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

SS | 159 | 9 | 6 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

SS | 160 | 11 | 9 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SS	161	32	18	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.1	8
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	1.0	80	80	0.3	24
Sport Fishing	0	0.0	0	80	0.3	24
Ordnance Disposal Area	100	NA		0		

SSS	162	60	64	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.6	60
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

SSS	163	54	64	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas *	20	1.0	20	100	1.0	100
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.8	64	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

*POSSIBLE FISHING BANK

SSS	164	57	67	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.8	16	100	0.9	90
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.4	8
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SSS	165	69	109	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas *	20	1.0	20	100	1.0	100
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	1.0	80	80	1.0	80
Sport Fishing *	0	1.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

* SNAPPER/GROUPER BANK

SPL	166	7	9	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.2	4	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.2	8	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.2	8	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

SPL	167	5	9	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.4	8	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.4	16	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20		
Outdoor Recreation	40	0.4	16	80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

ST	168	9	18	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.4	40
Unique & Highly Productive Areas	20	0.2	4	100	0.8	80
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.4	32
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.4	32
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

ST	169	16	24	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.2	16
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ST	170	16	27	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.2	16
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ST	171	33	48	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.2	4
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.3	24
Sport Fishing	0	0.0	0	80	0.3	24
Ordnance Disposal Area	100	NA		0		

ST	172	33	54	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.2	4
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.3	24
Sport Fishing	0	0.0	0	80	0.3	24
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

ST	173	35	48	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.3	24
Sport Fishing	0	0.0	0	80	0.3	24
Ordnance Disposal Area	100	NA		0		

ST	174	35	45	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.2	4
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.3	24
Sport Fishing	0	0.0	0	80	0.3	24
Ordnance Disposal Area	100	NA		0		

ST	175	37	33	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.0	0
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.2	16
Sport Fishing	0	0.0	0	80	0.2	16
Ordnance Disposal Area	100	NA		0		

STS	176	66	158	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

G	177	24	43	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.1	10
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.1	8
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	0.6	48	80	0.6	48
Sport Fishing	0	0.0	0	80	0.6	48
Ordnance Disposal Area	100	NA		0		

GS	178	30	91	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.1	10
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	.6	48	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

GS	179	31	73	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.1	10
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.3	6
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

WD	180	11	18	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.6	60
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.5	40
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.1	2
Outdoor Recreation	40	0.0	0	80	0.5	40
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WD	181	15	37	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.1	10
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.2	16
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.4	8
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

WD	182	9	36	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.1	8
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.7	14
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

WD	183	7	55	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.6	60
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.9	18
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

WD	184	8	58	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.8	16
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

WD	185	7	48	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

WD	186	7	55	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

SP	187	4	36	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100	0.9	90
Unique & Highly Productive Areas	20	0.0	0	100	1.0	100
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

SP	188	7	79	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.6	60
Unique & Highly Productive Areas	20	0.2	4	100	0.7	70
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	0.4	32	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SP	189	10	182	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.4	40
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

SP	190	5	55	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.2	20
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

SP	191	6	48	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.2	20
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

SP	192	4	37	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100	0.9	90
Unique & Highly Productive Areas	20	0.2	4	100	1.0	100
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

SPSE | 193 | 9 | 109 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100	0.7	70
Unique & Highly Productive Areas	20	0.2	4	100	0.7	70
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	0.4	32	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

SPSE | 194 | 7 | 76 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.2	4	100	0.8	80
Unique & Highly Productive Areas	20	0.2	4	100	0.8	80
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	0.4	32	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

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MP | 195 | 9 | 12 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.7	70
Unique & Highly Productive Areas	20	0.2	4	100	0.7	70
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.2	8	80	0.7	56
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.2	8	80	0.7	56
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

MP | 196 | 11 | 13 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.7	70
Unique & Highly Productive Areas	20	0.0	0	100	0.6	60
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.6	48
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.6	48
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MP	197	11	21	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.5	50
Unique & Highly Productive Areas	20	0.0	0	100	0.7	70
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.3	24
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.3	24
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

MP	198	8	48	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.6	60
Unique & Highly Productive Areas	20	0.0	0	100	0.7	70
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.2	16
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

MP	199	19	18	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40			80		
Commercial Fishing	80	1.0	80	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

MP	200	10	13	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.6	60
Unique & Highly Productive Areas	20	0.0	0	100	0.6	60
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.6	48
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.6	48
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MP	201	18	24	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.5	50
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.4	32
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.4	32
Commercial Fishing	80	1.0	80	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

MP	202	19	31	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.3	30
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.3	24
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

MP	203	24	45	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.2	20
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.2	16
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.6	12
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	0.6	48	80	0.6	48
Sport Fishing	0	0.0	0	80	0.6	48
Ordnance Disposal Area	100	NA		0		

MP	204	8	60	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.6	60
Unique & Highly Productive Areas	20	0.0	0	100	0.7	70
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.1	8
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MP	205	9	64	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.6	60
Unique & Highly Productive Areas	20	0.0	0	100	0.6	60
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.1	8
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	0.6	48	80	1.0	80
Sport Fishing	0	1.0	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

MPSE	206	21	37	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

MPSE	207	19	34	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

MPSE	208	20	34	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MPSE | 209 | 20 | 37 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.6	48	80		
Sport Fishing	0	0.2	0	80		
Ordnance Disposal Area	100	NA		0		

MPSE | 210 | 27 | 47 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.2	20
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.2	16
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.5	10
Outdoor Recreation	40	0.0	0	80	0.2	16
Commercial Fishing	80	0.6	48	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

MPSE | 211 | 24 | 64 | 0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.2	20
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.7	14
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.6	48	80	0.6	48
Sport Fishing	0	0.0	0	80	0.6	48
Ordnance Disposal Area	100	NA		0		

MPSE | 212 | 15 | 67 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.4	40
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.1	8
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing	80	0.4	32	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB | 213 | 133 | 210 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB | 214 | 132 | 200 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

GB | 215 | 131 | 250 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB | 216 | 128 | 225 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB | 217 | 126 | 250 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

* SNAPPER / GROUPER BANK

GB | 218 | 125 | 250 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.4	8	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB | 219 | 125 | 200 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.4	8	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB | 220 | 125 | 200 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.4	8	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB	221	125	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.4	8	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB	222	118	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB	223	118	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB	224	118	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB	225	124	210	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

*POSSIBLE FISHING BANK

GB	226	123	225	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

GB	227	121	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

GB	228	120	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB	229	120	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.6	12	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB	230	120	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB	231	119	350	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB	232	119	375	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB | 233 | 118 | 375 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB | 234 | 118 | 200 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB | 235 | 117 | 200 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

* SNAPPER/GROUPER BANK

GB | 236 | 118 | 300 | G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB	237	118	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	PR	F(ST)	Oil Spills (1000 bbl+) IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB	238	117	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	PR	F(ST)	Oil Spills (1000 bbl+) IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

326

GB	239	117	300	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	PR	F(ST)	Oil Spills (1000 bbl+) IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

GB	240	120	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	PR	F(ST)	Oil Spills (1000 bbl+) IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	2.0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

* SNAPPER/GROUPER BANK

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB	241	120	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

GB	242	119	180	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

T23

GB	243	119	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

*POSSIBLE FISHING BANK

GB	244	118	250	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

GB	245	117	250	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

NOS-1	246	106	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

* POSSIBLE FISHING BANK

322

NOS-1	247	105	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.6	12	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

NOS-1	248	105	400	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.4	8	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

NOS-1	249	104	325	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	0.6	48	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

* POSSIBLE FISHING BANK

NOS-1	250	103	325	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing *	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

NOS-1	251	104	325	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas *	20	1.0	20	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing *	80	1.0	80	80		
Sport Fishing	0	1.0	0	80		
Ordnance Disposal Area	100	NA		0		

*SNAPPER/GROUPER BANK

NO	252	66	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

NO	253	66	250	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

NO	254	67	170	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

NO	255	69	200	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

NO	256	72	140	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

NO	257	72	160	G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100		NCG
Unique & Highly Productive Areas	20	0.0	0	100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40		
Beaches	40	0.0	0	80		
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20		
Outdoor Recreation	40	0.0	0	80		
Commercial Fishing	80	0.4	32	80		
Sport Fishing	0	0.0	0	80		
Ordnance Disposal Area	100	NA		0		

MS-2	258	52	225	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

MS-2	259	53	310	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

MS-2	260	49	400	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2	261	50	400	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

MS-2	262	43	425	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.1	8
Sport Fishing	0	0.0	0	80	0.1	8
Ordnance Disposal Area	100	NA		0		

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MS-2	263	45	500	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.0	0
Sport Fishing	0	0.0	0	80	0.0	0
Ordnance Disposal Area	100	NA		0		

MS-2	264	33	500	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.3	24
Sport Fishing	0	0.0	0	80	0.3	24
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2	265	31	500	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

MS-2	266	38	400	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.2	16
Sport Fishing	0	0.0	0	80	0.2	16
Ordnance Disposal Area	100	NA		0		

MS-2	267	37	400	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.2	16
Sport Fishing	0	0.0	0	80	0.2	16
Ordnance Disposal Area	100	NA		0		

MS-2	268	31	300	0&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.7	14
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP, *Hymenopenaeus robustus*
SEE FOOTNOTE 21, SECTION IV K, PROXIMITY SCALE STRUCTURES.

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2	269	30	250	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.6	12
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

MS-2	270	30	275	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.0	0	20	0.5	10
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

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MS-2	271	36	400	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.2	16
Sport Fishing	0	0.0	0	80	0.2	16
Ordnance Disposal Area	100	NA		0		

MS-2	272	35	500	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.3	24
Sport Fishing	0	0.0	0	80	0.3	24
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2	273	31	200	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

MS-2	274	33	200	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	1.0	80	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.3	24
Sport Fishing	0	0.0	0	80	0.3	24
Ordnance Disposal Area	100	NA		0		

MS-2	275	28	180	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

MS-2	276	28	160	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2 | 277 | 27 | 180 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

MS-2 | 278 | 24 | 180 | 0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.6	48
Sport Fishing	0	0.0	0	80	0.6	48
Ordnance Disposal Area	100	NA		0		

330

MS-2 | 279 | 27 | 180 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.8	64	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

MS-2 | 280 | 31 | 400 | 0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2	281	30	200	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

MS-2	282	26	120	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

MS-2	283	26	120	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

MS-2	284	31	200	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.9	18
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.4	32
Sport Fishing	0	0.0	0	80	0.4	32
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2	285	28	150	0

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.0	0
Unique & Highly Productive Areas	20	0.0	0	100	0.0	0
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.5	40
Sport Fishing	0	0.0	0	80	0.5	40
Ordnance Disposal Area	100	NA		0		

MS-2	286	18	400	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.4	40
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.9	18
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

MS-2	287	21	500	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.8	16
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.8	64
Sport Fishing	0	0.0	0	80	0.8	64
Ordnance Disposal Area	100	NA		0		

MS-2	288	24	500	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.2	20
Unique & Highly Productive Areas	20	0.0	0	100	0.2	20
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.7	14
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing	80	0.4	32	80	0.6	48
Sport Fishing	0	0.0	0	80	0.6	48
Ordnance Disposal Area	100	NA		0		

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2 | 289 | 17 | 300 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.4	40
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	0.9	18
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing*	80	0.6	48	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

MS-2 | 290 | 20 | 350 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	0.9	72
Sport Fishing	0	0.2	0	80	0.9	72
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

C3

MS-2 | 291 | 24 | 350 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.2	16	20	0.9	18
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	0.6	48
Sport Fishing	0	0.0	0	80	0.6	48
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

MS-2 | 292 | 16 | 200 | O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS: Structures IM	Structures PR	Structures F(ST)	Oil Spills (1000 bbl+) IM	Oil Spills (1000 bbl+) PR	Oil Spills (1000 bbl+) F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.5	50
Unique & Highly Productive Areas	20	0.0	0	100	0.5	50
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.1	8
Commercial Fishing *	80	0.6	48	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

ANALYSIS OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACT

MS-2	293	18	250	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.4	40
Unique & Highly Productive Areas	20	0.0	0	100	0.4	40
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	1.0	80
Sport Fishing	0	0.2	0	80	1.0	80
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

MS-2	294	22	300	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.4	32	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	0.7	56
Sport Fishing	0	0.0	0	80	0.7	56
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

MS-1	295	20	200	O&G

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20	0.0	0	100	0.3	30
Unique & Highly Productive Areas	20	0.0	0	100	0.3	30
Biota Seaward of Estuary/Marsh/Nursery Areas	0	1.0	0	40	1.0	40
Beaches	40	0.0	0	80	0.0	0
Coastal Activities/Multiple Uses:						
Shipping	80	0.6	48	20	1.0	20
Outdoor Recreation	40	0.0	0	80	0.0	0
Commercial Fishing *	80	0.6	48	80	0.9	72
Sport Fishing	0	0.2	0	80	0.9	72
Ordnance Disposal Area	100	NA		0		

* ROYAL RED SHRIMP

SIGNIFICANT RESOURCE FACTORS	IMPACT FACTORS					
	Structures			Oil Spills (1000 bbl+)		
	IM	PR	F(ST)	IM	PR	F(OS)
Natural Resource Systems:						
Refuges/Management Areas	20			100		
Unique & Highly Productive Areas	20			100		
Biota Seaward of Estuary/Marsh/Nursery Areas	0			40		
Beaches	40			80		
Coastal Activities/Multiple Uses:						
Shipping	80			20		
Outdoor Recreation	40			80		
Commercial Fishing	80			80		
Sport Fishing	0			80		
Ordnance Disposal Area	100			0		

ATTACHMENT I

GEOLOGICAL SURVEY, OCS OIL AND GAS OPERATIONS LEASE MANAGEMENT PROGRAM

(1) CODE BOOK

(2) INSPECTION REPORT
DRILLING

(3) INSPECTION REPORT
PRODUCTION

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF COAST REGION

May 27, 1971

NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES
IN THE OUTER CONTINENTAL SHELF, GULF COAST REGION

Attached is a copy of the latest working draft of the inspection forms for both drilling and producing operations, as well as the itemized list of potential areas of inspection and the list of actions attendant thereto. This is the latest updating of these forms and instructions and supersedes those given to members of the Offshore Operators Committee in the Director's Office on May 20, 1971. These working draft copies are to be utilized by our personnel from now until they are further modified. Your remarks concerning any needed improvement in these forms or clarification of the itemized list should be addressed to this office whereby we may receive them no later than July 19, 1971.

Robert F. Evans
Regional Oil and Gas Supervisor

Attachments

GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
GULF COAST REGION

OCS LEASE MANAGEMENT PROGRAM
GULF OF MEXICO

LIST OF POTENTIAL ITEMS OF NON-COMPLIANCE AND ENFORCEMENT ACTION

MAY 1971

358

PREFACE

This list of potential items of non-compliance (PINCs) covers oil and gas operations on the Outer Continental Shelf in the Gulf of Mexico. They are derived from the requirements found in Title 30 of the Code of Federal Regulations and OCS Orders nos. 1–7, dated August 28, 1969 and nos. 8 and 9 dated October 30, 1970. The PINC's are organized more or less chronologically with respect to the usual sequence of events in the exploration and development of oil and gas on an OCS lease. Reference is made in the left-hand margin of the list to the appropriate chapter and paragraph of Title 30 or OCS Order. Each PINC is sequentially numbered for easy reference.

Each specific PINC is presented in the form of a question. If the lease operator has fulfilled the requirement, the question can be answered "yes", and he is in compliance. If the question is answered "no", then an incident of non-compliance exists.

Some of the PINC's include an effective date to be in compliance as a result of time limits specified in OCS Orders 8 and 9. Notes in the right-hand margin of the list should help the inspector locate a particular PINC. The letters to the left of the PINC number indicate the enforcement action to be taken if an incident of non-compliance exists. Specific enforcement action is described beginning on page 194.

GENERAL REQUIREMENTS

The following are general requirements:

Authority

250.46 The lessee shall perform all operations in a safe and workmanlike manner.

250.45 The lessee shall take all steps necessary to prevent accidents and fires.

250.41 The lessee shall take all necessary precautions to keep all wells under control at all times.

250.41(a) The lessee shall utilize only personnel trained and competent to drill and operate oil and gas wells.

250.41(a) The lessee shall utilize and maintain materials, high pressure fittings and equipment necessary to insure the safety of operating conditions and procedures.

7.1.C(3) The operators personnel shall be thoroughly instructed in the technique of equipment maintenance and operation for the prevention of pollution.

7.1.C(3) Non-operator personnel shall be informed in writing, prior to executing contracts, of the operator's obligation to prevent pollution.

250.43 Discharged wastewater shall not create conditions which will adversely affect public health, or the legitimate use of the waters.

250.43 The lessee shall remove any pollutant which threatens aquatic life, public or private property.

7.1.C(1) All production facilities shall be such as are necessary to control the maximum anticipated pressures and production.

These general requirements are implemented by the following specific potential items of non-compliance:

GENERAL POLLUTION CONTROL EQUIPMENT AND PROCEDURES

Authority	*Enforcement Action*		*Notes*
		CONTAINMENT	
7.1.C(2) 8.2.A(3)	W/P(1)	1. Is the platform or fixed or mobile structure equipped with curbs, gutters, and drains in all deck areas in a manner necessary to collect all contaminants, unless drip pans or equivalent are placed under equipment?	Curbs, Gutters, and Drains
7.1.C(2) 8.2.A(3)	P	2. Are all drains piped to a tank or a sump equipped to automatically maintain the oil at a level sufficient to prevent discharge of oil into the Gulf waters or has an alternative method been approved by the Supervisor?	Automatic Sump
8.2.A(3)	P	3. Does the pollution control system prevent spilled oil from flowing into the wellhead area?	Oil in Well-Head Area
		DISPOSAL	
250.43(a) 7.1.A(1),(3) 7.1.B(1)	P/Z	4. Is the operator not disposing of oil in any form including drilling mud, drill cuttings, sand and other solids containing oil, into the waters of the Gulf?	Oil Pollution
250.43(a) 7.1.A(3)	Z	5. If the drilling mud contains toxic substances, is it disposed of into the Gulf with neutralization?	Toxic Substances
7.1.A(2)	P/Z	6. Is the operator not disposing of liquid waste materials containing harmful substances into the waters of the Gulf without treatment?	Liquid Waste Pollution
7.1.B(2)	W	7. Are mud containers and other solid waste materials incinerated or transported to shore for disposal?	Solid Waste
		INSPECTIONS	
7.2.A(1)	W	8. Are pollution inspections of manned facilities made daily?	Manned Facilities
7.2.A(2)	W	9. Are unattended facilities inspected at frequent intervals?	Unmanned Facilities
		SPILLS	
250.43(a) 7.2.B(1)	W	10. Are all spills or leakage of oil and liquid pollutants recorded by the operator and available for inspection by the Supervisor?	Spill Records
250.43(a)	W	11. Are all spills or leakage of oil, etc., reported orally to the District Engineer without delay?	Oral Reports
250.43(a) 7.2.B(2),(3)	W	12. Are all spill reports of 15 barrels or more confirmed in writing?	Confirmation Spill Reports
250.43(a) 7.2.B(3)	W	13. Are all spills or leakage of oil, etc., of more than 50 bbl, and those which cannot be immediately controlled reported orally without delay to the Supervisor, district engineer, Coast Guard, and Regional Director, FWQA (EPA)?	More than 50 bbl. Spills

7.1.C(4)	W	14. Do operators notify each other upon observation of equipment malfunction or pollution resulting from another's operation?	Other Operator's Spills
		CONTINGENCY PLAN AND EQUIPMENT	
250.43(a) 7.3.A,B	W	15. Does operator have an emergency plan for controlling and removing pollution filed with the Supervisor which provides for: a. Standby pollution control equipment immediately available to the operator at a land base location? b. Regular inspection and maintenance of such equipment? c. Approval by the Supervisor of such equipment and the land base location and of any changes in equipment and location?	Emergency Plan and Pollution Control Equipment
		SEWAGE DISPOSAL	
8.2.A(9)	P(2)	16. Has a sewage disposal system been installed?--Effective 10–30–71	Sewage Disposal
8.2.A(9)	P(2)	17. Does the sewage effluent following treatment contain 50 ppm or less of BOD, 150 ppm or less of suspended solids, and have a minimum chlorine residual of 1.0 mg/liter after a minimum retention time of 15 minutes?--Effective 10–30–71	Effluent Standards
		DRILLING OPERATIONS (OFFICE RECORDS)	
250.31	W	18. If operations are not conducted by the record owner, has the lessee submitted to the Supervisor a Designation of Operator prior to the operator commencing operations?	Designation of Operator
250.32	W	19. If the Supervisor requested it, did the lessee designate a representative or local agent empowered to receive notices and comply with orders of the Supervisor?	Designation of Representative
250.34(a),(b)	Z	20. Has the lessee submitted to the Supervisor a lease exploratory or development plan for approval prior to commencing operations?	Exploratory/Development Plan
250.34(c) 250.91	Z	21. Has the Application for Permit to Drill been approved prior to commencing operations?	Application for Permit to Drill
250.11 2.0	W	22. If more than five development wells have been drilled in this field, (if there were less than five development wells in the field on August 28, 1969) has the operator applied to the Supervisor to establish field rules?	Field Rules
250.11 250.34(c) 2.0	Z	23. If the Supervisor has issued field rules, is the development well being drilled in accordance with the provisions of the appropriate field rules?	Development Well

250.93	W	24. Has the operator submitted a separate Monthly Report of Operations for the lease beginning with the month in which drilling operations were initiated which includes all the information required by 30 CFR 250.93?	Monthly Report of Operations

DRILLING OPERATIONS (FIELD INSPECTION)

CASING AND CEMENTING PROGRAM

250.41(a)(1) 2.1.A.,B.,C.,D.	Z	25. Are all casing strings new pipe or equivalent capable of withstanding collapse, bursting, tensile, and other stresses?	New Pipe Requirements
250.41(a)(1) 2.1.A	Z	26. Is the drive or structural casing set in accordance with the requirements of OCS Order No. 2 or field rules?	Drive Casing
250.41(a)(1) 2.1.B(1),(2)	Z	27. Has the following casing been set and cemented in accordance with the requirements of OCS Order No. 2 or field rules? a. Conductor casing. b. Surface casing.	Conductor and Surface Casing
250.41(a)(1) 2.1.B(2)	Z	28. If there were any indications that the surface casing did not cement properly: a. Was a temperature or cement bond survey run? b. Was appropriate remedial action taken?	Bond or Temperature Log
250.41(a)(1) 2.1.C	Z	29. Has the intermediate casing been set properly to cover and isolate all hydrocarbon zones and to isolate abnormal pressure intervals from normal pressure intervals in accordance with OCS Order No. 2 or field rules?	Intermediate Casing
250.41(a)(1) 2.1.D	Z	30. Has the production casing been set and cemented in a manner to isolate all hydrocarbon zones in accordance with OCS Order No 2?	Production Casing
250.41(a)(1) 2.1.D	Z	31. If a liner is used as intermediate or production casing: a. Was the seal pressure tested? b. Was the test recorded in driller's log?	Liner Seal Test
250.41(a)(1) 2.1.E	Z	32. Have all casing strings, except the drive or structural casing, been pressure tested using minimum pressures given in OCS Order No. 2 (or field rules) prior to drilling the plug after cementing?	Pressure Tests
250.41(a)(1) 2.1.E	W	33. Are all casing pressure tests recorded in the driller's log?	Pressure Tests Recorded
250.41(a)(1) 2.1.E	Z	34. Has appropriate remedial action (recementing, repair, etc.) been taken if there was any indication of a leak during the pressure tests?	Remedial Action

250.41(a)(1) 2.1.E	Z	35. Did the operator wait 24 hours after cementing any casing before continuing to drill? (Note: If cementing under pressure, drilling can resume in 8 hours for conductor casing and 12 hours for all other strings)	W.O.C. Time
		MUD PROGRAM	
250.41(a)(2) 2.3	Z	36. Are sufficient quantities of mud readily available to insure well control?	Quantity of Mud
250.41(a)(2) 2.3	Z	37. Is the drilling mud program adequate to prevent blowouts?	
250.41(a)(2) 2.3.A	Z	38. Is the mud properly conditioned by circulating from bottom to top with the drill pipe just off the bottom of the hole before starting out of hole?	Mud Control
250.41(a)(2) 2.3.A	Z	39. Is the annulus filled with mud before the mud level drops 100 feet when coming out of the hole with the drill pipe?	Keeping Hole Full
250.41(a)(2) 2.3.A	Z	40. Is a mechanical device for measuring the amount of mud needed to fill the hole used?	Measuring Device
250.41(a)(2) 2.3.A	Z	41. Is the required procedure described in OCS Order 2, Paragraph 3.A followed whenever there is an indication of swabbing or an influx of formation fluids?	Swabbing
250.41(a)(2) 2.3.B	Z	42. Is mud testing equipment maintained on the drilling platform at all times?	Test Equipment
250.41(a)(2) 2.3.B	Z	43. Are mud tests performed daily, or more frequently as conditions warrant?	Mud Tests
250.41(a)(2) 2.3.B	W	44. Are the mud tests recorded in the driller's log?	Records
250.41(a)(2) 2.3.B(1)	Z	45. Is a recording mud pit level indicator installed on the derrick floor and used after setting and cementing conductor casing?	Mud Pit Level Indicator
250.41(a)(2) 2.3.B(1)	Z	46. Is an audio or visual warning device on mud pit level indicator installed on the derrick floor and used after setting and cementing conductor casing?	Warning Device
250.41(a)(2) 2.3.B(2)	Z	47. Is a mud volume measuring device installed on the derrick floor and used after setting and cementing conductor casing?	Mud Volume Measuring
250.41(a)(2) 2.3.C	Z	48. Is a mud return indicator installed on the derrick floor and used after setting and cementing conductor casing?	Mud Return Indicator

250.41(a)(3) 2.2.A	Z	49. Before drilling below the conductor casing string, has the operator installed one remotely controlled bag-type blowout preventor and equipment to circulate the drilling fluid to the drilling structure or vessel?	Conductor Casing
250.41(a)(3) 2.2.A	Z	50. Is a large diameter pipe with control values installed on the conductor casing below the BOP to permit diversion of hydrocarbons and other fluids?	Diverter
250.41(a)(3) 2.2.A	Z	51. If the blowout preventer is on the Gulf floor are the choke and kill lines equipped to permit the diversion of hydrocarbons and other fluids?	Subsea B.O.P.
250.41(a)(3) 2.2.B	Z	52. Before drilling below the surface casing has the operator installed: a. The following remotely controlled, hydraulically operated blowout preventers with a working pressure which exceeds the maximum anticipated surface pressure: *i.* One bag-type? *ii.* One equipped with pipe rams? *iii.* One equipped with blind rams? b. A drilling spool with side outlets if side outlets are not provided in the blowout preventer body? c. A choke line? d. A kill line? e. A fill-up line?	Surface Casing
2.2.C	Z	53. Before drilling below the intermediate casing has the operator installed: a. Four remotely controlled, hydraulically operated blowout preventers with a working pressure which exceeds the maximum anticipated surface pressure including: *i.* One bag-type? *ii.* One equipped with pipe rams? *iii.* One equipped with blind rams? b. A drilling spool with side outlets if side outlets are not provided in the blowout preventer body? c. A choke manifold? d. A kill line? e. A fill-up line?	Interme-diate Casing
250.41(a)(3) 2.2.D	Z	54. Do accumulators or accumulators and pumps maintain a pressure capacity reserve at all times to provide for repeated operation of hydraulic blowout preventors?	Accumu-lator Pressure Capacity
250.41(a)(3) 2.2.E	Z	55. Is a back pressure valve in the open position maintained on the rig floor at all times while drilling (an inside blowout preventor assembly)?	Safety Valves

250.41(a)(3) 2.2.E	Z	56. Is a drill string safety valve in the open position maintained on the rig floor at all times while drilling?	
250.41(a)(3) 2.2.E	Z	57. Is a separate back pressure valve and drill string safety valve maintained in an open position on the rig floor which will fit all pipe in the drill string?	Drill String Valves
250.41(a)(3)	Z	58. Is a kelly cock installed below the swivel, and an essentially full opening kelly cock installed at the bottom of the kelly of such design that it can be run through the blowout preventors?	Kelly Cock
250.41(a)(3) 2.2.D	Z	59. Are the ram-type blowout preventors and related control equipment tested with water to the rated working pressure of the stack or casing (whichever is less) at the following times: a. When installed? b. Before drilling out after setting each casing string? c. Not less than once a week while drilling? d. Following repairs that require disconnecting a pressure seal in the BOP assembly?	Water Test Ram-type BOP
250.41(a)(3) 2.2.D	Z	60. While drill pipe is in use, are the ram-type blowout preventors actuated once each trip and at least once each day?	Operate Ram-type
250.41(a)(3) 2.2.D	Z	61. Is the bag-type blowout preventor water tested to 70 percent of the working pressure of the stack assembly or the casing (whichever is less) at the same times the ram-type BOP is tested?	Water Test Bag-type BOP
250.41(a)(3) 2.2.D	Z	62. Is the bag-type blowout preventor actuated on the drill pipe at least once each week?	Operate Bag-type
250.41(a) 250.41(a)(3) 2.2.D	Z	63. Is a blowout prevention *drill* held weekly for each drilling crew to insure that all equipment is operating and that the crews are properly trained?	Weekly BOP Drill
250.41(a)(3) 2.2.D	Z	64. a. Are all blowout preventor tests recorded in driller's log? b. Are all blowout preventor drills recorded in driller's log?	BOP Test Records
		IDENTIFICATION	
250.37 1.1	W	65. Is the platform or fixed structure identified with signs: a. Located at two diagonal corners of the structure? b. Showing the company name, area, and block number? c. With letters and figures not less than 12 inches high?	Identification of Platform
		PERSONAL SAFETY	
250.46 Coast Guard	Z	66. For all personnel on the rig are there sufficient: a. Life jackets? b. Life rafts?	Personal Safety

AUXILIARY POWER SUPPLY

8.2.A(4)	P	67. Is there an auxiliary electrical power supply installed to provide emergency power capable of operating all electrical equipment required to maintain safety of operation, in the event the primary electrical power supply fails?	Auxiliary Power Supply

ELECTRICAL SYSTEMS

8.2.A(8)(b),(c)	P(2)	68. Are all electrical generators, motors, and lighting systems installed, protected, and maintained in accordance with the most current edition of the National Electric Code and API RP 500A and B, as appropriate? (Note: Marine-armored cable or metal-clad cable may be substituted for wire in conduit in any area). Effective 10–30–71	General Electrical Systems
8.2.A(8)(a)	P(2)	69. Are all engines equipped with low-tension ignition systems containing rigid connections and shielded wiring capable of preventing an electrical discharge sufficient to ignite a combustible misture?––Effective 10–30–71	Ignition Systems

PLATFORMS, WELLS, AND PRODUCTION EQUIPMENT (OFFICE RECORDS)

PLATFORM APPROVALS

250.19(a) 8.1	P	70. Has the operator submitted for approval a design application of a platform, fixed structure, or artificial island which contains all of the items listed in OCS Order No. 8.1, prior to erecting the structure?(Platforms erected or modified after 10–30–70.)	Platform Design Application
250.19(a) 8.1.C	P	71. Are detailed structural plans certified by a registered professional engineer on file and maintained by the operator or his designee?(Platforms erected or modified after 10–30–70)	Structural Plans on File

MULTIPLE COMPLETION

250.92 6.3.A(1)	Z	72. Was form 9–331 for multiple completions approved before completing wells?	Form 9–331 Approved
6.3.A(2)	Z	73. Are multiple completed zones that become intercommunicated immediately repaired to separate the zones after approval is obtained?	Repair Communicated Zones

TUBINGLESS COMPLETION

6.3.B(1)	Z	74. Are all tubing strings in a multiply completed hole run to the same depth below the deepest producible zone?	Tubing Strings Same Depth
6.3.B(2)	Z	75. Are tubing strings new pipe?	New Pipe
6.3.B(2)	Z	76. Does cement extend a minimum of 500 feet above the uppermost producible zone?	Cement

6.3.B(3)	Z	77. Has a temperature or cement bond log been run if lost circulation or other unusual circumstances occurred during cementing operations?	Temperature or Bond Log
250.92 6.3.B(4)	Z	78. Was form 9–331 for tubingless completions approved before completing well?	
250.38(b) 250.95	W	79. Did the operator submit a well completion report together with all required well records within 30 days of completion?	Well Completion Report
		SUBSEQUENT WELL OPERATIONS	
250.36 250.91 250.92	Z	80. Prior to commencing operations not previously approved such as deepening, plugging-back, repairing, acidizing or stimulating production, perforating, side tracking, squeezing, abandoning, or any similar operation, did the operator submit an application or notice to the Supervisor and obtain approval?	Subsequent Well Operations
250.92(b)	W	81. Did the operator on changing the condition of a well submit a detailed subsequent report of all work done and the results obtained?	Subsequent Report
250.93	W	82. Has the operator submitted a separate Monthly Report of Operations for the lease beginning with the month in which drilling operations were initiated which includes all the information required by 30 CFR 250.93?	Monthly Report of Operations
		EQUIPMENT RECORDS	
250.19(b) 9.1.A	W	83. Has the operator submitted records semi-annually showing the present status and past history of each control device on all oil and gas pipelines (located on platforms) including dates and details of inspection, testing, repairing, adjustment, and reinstallation?	Pipeline Control Device Records
8.2.A(1)	W	84. Has operator submitted records semi-annually to the Supervisor showing the present status and past history of each manual and automatic shut-in device used on all pressurized vessels and water separation facilities in service?	Shut-in Device Records
8.2.A(2) 5.5	W	85. Has the operator submitted records to the District Office semi-annually showing the present status and past history of each wellhead automatic shut-in device?	Submit Records
8.2.A.(2)(i)	P	86. Has the operator arranged (requested in writing) for a representative of the Geological Survey to witness a complete testing and inspection of the safety system: a. At the time production commenced? b. Within the last six months?	Witnessed Tests

		PRODUCED WATER DISPOSAL	
8.2.A(5)	W	87. Is the method and location of wastewater disposal approved by the Supervisor if location is other than into Gulf waters?––Effective 10–30–71	Other Disposal Methods
8.2.A(5)(b)	W	88. Are the results of effluent sampling submitted annually to the Supervisor and does the report include dates, time, and location of samples, volumes of waste discharge on dates of sampling in barrels per day, and the results of the specific analysis and physical observations?––Effective 10–30–71	Annual Report
		FIRE CONTROL SYSTEM	
8.2.A(6)(e)	W	89. Has a diagram of the firefighting system been submitted to the District Office?––Effective 10–30–71	Diagram Submitted
8.2.A(6)(c)	W	90. Are records of the firewater system pump tests submitted semi-annually to the District Office?––Effective 10–30–71	Semi-annual Test Record
		GAS DETECTION SYSTEM	
8.2.A(7)(e)	W	91. Was an application for the installation and maintenance of a gas detection system submitted to the District office for Approval?––Effective 10–30–71	Application
		PLATFORM ABANDONMENT	
250.18.d	W	92. Upon termination of the right of use and easement, did lessee remove platform and restore premises to the Supervisor's satisfaction?	Removal of Platform

PLATFORMS, WELLS, AND PRODUCTION EQUIPMENT (FIELD OPERATIONS)

		WELLHEAD AREA	
6.1.A	Z	93. Are all completed wells equipped with casingheads, wellhead fittings, valves, and connections with a rated working pressure equal to or greater than the surface shut-in pressure of the well?	Wellhead Equipment
6.1.A	Z	94. Are all completed wells equipped with connections and valves designed and installed to permit fluid to be pumped between any 2 strings of casing?	
6.1.A	Z	95. Are all completed wells with a surface pressure in excess of 5,000 psi equipped with two master valves on the tubing?	Two Master Valves
6.1.A	W	96. Are all completed wells equipped with wellhead connections assembled and tested prior to installation by a fluid pressure equal to the rated test pressure of the fitting to be installed?	Testing Wellhead Fittings
6.1.B	Z	97. Are any wells showing sustained pressure on the casinghead, or leaking gas or oil between the production casing and the next larger casing string, tested using the procedure described in OCS Order No. 6.1.B?	Casing Leak Test

250.37 1.3	W	98. Is each completion individually identified at the wellhead by a legible sign painted on, or affixed to the well showing (1) the OCS lease number and (2) the well number?	Identification at Wellhead
8.2.A(2)(a) 5.5	Z	99. Are all well head assemblies equipped with an operable automatic fail-close valve?	Wellhead Automatic Safety Valve
8.2.A(2)(b)	Z	100. Are all flowlines from wellheads equipped with high-low pressure sensors located close to the wellhead and set to activate the automatic safety valve in the event of abnormal pressures (high or low) in the flowline?	Flowline Sensors
8.2.A(2)(a)	Z	101. Are automatic safety valves temporarily out of service (manually opened) flagged?	Flagged Automatic Safety Valve
8.2.A(2)(g)	Z	102. Is the operation of all automatic well head safety valves tested weekly?	Weekly Tests
8.2.A(2)(g)	Z	103. Is the holding pressure of all automatic well head safety valves tested monthly?	Monthly Tests
8.2.A(2)(g)	W	104. Are the results of all automatic wellhead safety valves tests recorded and maintained in the field?	Test Records
		HEADERS AND CHECK VALVES	
8.2.A(2)(c)	Z	105. Are all headers equipped with properly sealing check valves on the individual flowlines?	Check Valves
8.2.A(2)(c)	Z	106. If unprotected by a relief valve with connections to bypass the header, can the flowlines and valves from each well located upstream of and including the header valve, withstand the shut-in pressure of that well?	Flowlines and Valves withstand Shut-in Pressure
8.2.A(2)(h)	Z	107. Is the holding pressure of all check valves tested monthly?	Monthly Check Valve Tests
8.2.A(2)(h)	Z	108. If four consecutive monthly holding pressure tests of check valves are satisfactory to the Supervisor are these tests conducted at least quarterly?	Quarterly Check Valve Tests
8.2.A(2)(h)	W	109. Are the results of all check valve tests recorded and maintained in the field?	Check Valve Test Records
		PRODUCTION VESSEL CONTROLS	
8.2A(1)(a)	P(2)	110. Are all separators in service equipped with: a. An operable high-pressure shut-in sensor? b. An operable low pressure shut-in sensor? c. An operable low-level shut-in control? d. An operable relief-valve?	Separators

8.2.A(1)(e)	P(2)	111. Is the high pressure shut-in sensor set no higher than 5 percent below the rated or designed working pressure of the vessel?	High Pilot Setting
8.2.A(1)(e)	P(2)	112. Is the low pressure shut-in sensor set no lower than 10 percent below the lowest pressure in the operating pressure range on all vessels with a rated or designed working pressure of more than 400 PSI?	Low Pilot Setting
8.2.A(1)(e)	P(2)	113. On pressure vessels with a rated or designed working pressure less than 400 PSI is: a. The high-pressure sensor set according to the guidelines for pressure settings on vessels with a designed working pressure greater than 400 PSI, but not within 5 PSI of the vessel's rated working pressure? b. The low-pressure sensor set according to the guidelines for pressure settings on vessels with a designed working pressure greater than 400 PSI, but not lower than 5 PSI below the lowest pressure in the operating range?	Low Pressure Vessel Pilot Settings
8.2.A(2)(c)	P(2)	114. If unprotected by a relief valve with connections to bypass the header, can the inlet valve to a separator, the flowline, and all equipment upstream of the valve, withstand shut-in wellhead pressure?	Inlet Valve
8.2A(1)(d)	P(2)	115. Are all other hydrocarbon handling pressure vessels unless determined by the Supervisor to be protected in some other way, equipped with: a. An operable high-pressure shut-in sensor? b. An operable low-pressure shut-in sensor? c. An operable high-level shut-in control? d. An operable low-level shut-in control? e. An operable relief valve?	Other Hydrocarbon Pressure Vessels
8.2A(1)(a)	P(2)	116. Are all pressure vessels that can discharge to a flare equipped with an operable high-level control?	Discharge to Flare
8.2.A(1)(g)	P(2)	117. Are all flare lines equipped with a scrubber or similar separation equipment?	Flare Line Scrubber
8.2A(1)(b)	P(2)	118. Are all pressure surge tanks equipped with: a. An operable high-pressure shut-in sensor? b. An operable low-pressure shut-in sensor? c. An operable high-level shut-in control? d. An operable relief valve? e. A flare line?	Pressure Surge Tank
8.2A(1)(c)	P(2)	119. Are all atmospheric surge tanks equipped with an operable high-level shut-in?	Atmospheric Surge Tank

8.2.A(1)(e)	P(2)	120. Are pilot-operated pressure relief valves equipped to permit testing with an external pressure source?	Relief Valves
8.2.A(1)(e)	P(2)	121. Are all spring loaded pressure relief valves: a. Equipped to permit testing with an external pressure source? b. If not so equipped, bench tested?	
8.2.A(1)(e)	P(2)	122. Is pressure relief valve set no higher than the designed working pressure of the vessel?	Relief Valve Settings
		PIPELINE CONTROLS ON PLATFORMS	
250.19(b) 9.1.A(1)	PL	123. Are pipelines leaving a platform, receiving production from that platform equipped with: a. An operable high-pressure sensor to directly or indirectly shut-in the platform wells? b. An operable low-pressure sensor to directly or indirectly shut-in the platform wells?	Departing Pipeline
250.19(b) 9.1.A(2)(a)	PL	124. Are pipelines delivering production to production facilities on a platform equipped with an operable automatic shut-in valve connected to the platform's automatic and remote shut-in system?	Incoming Pipelines
250.19(b) 9.1.A(2)(b)	PL	125. Are piplines coming onto a platform equipped with a check valve?	Pipeline Check Valves
250.19(b) 9.1.A(2)(c)	PL	126. Are pipelines which cross a platform and do not deliver production to the platform, but may or may not receive production from the platform equipped with the following devices to activate an automatic shut-in valve located in the upstream portion of the pipeline at the platform and connected to either the platform automatic and remote shut-in system or to an independent remote shut-in system: a. An operable high-pressure sensor? b. An operable low-pressure sensor?	Crossing Pipelines
250.19(b) 9.1.A(2)(d)	P(2)	127. Are pipeline pumps equipped with: a. An operable high-pressure shut-in device? b. An operable low-pressure shut-in device?	Pipeline Pump Sensors
		REMOTE SHUT-IN CONTROLS	
8.2.A(2)(e)	P	128. Are all remote shut-in controls quick-opening valves?	Remote Shut-in Controls
8.2.A(2)(e)	P	129. Are remote shut-in controls located on: a. The helicopter deck? b. All exit stairway landings? c. On each boat landing? d. Others?	Location

SUBSURFACE SAFETY DEVICES

250.41(b) 5.1	Z	130. Are all wells (completions) capable of flowing oil or gas: a. Equipped with an operable subsurface safety device? b. Installed at least 1,000 feet below the Gulf floor?	Subsurface Safety Device
250.41(b) 5.4	Z	131. If any well capable of flowing oil or gas does not have a subsurface safety device, did the operator request and receive approval for a waiver from the requirements of OCS Order No. 5?	Waiver of Safety Device
250.41(b) 5.6	Z	132. If a well is capable of flowing oil or gas, but is not equipped with a subsurface safety device, is a subsurface safety device available at the field location for use in the event of an emergency?	Availbility of Sub-surface Safety Device
250.41(b) 5.2	Z	133. Has the subsurface safety device which is an integral part of the tubing string been tested at intervals not exceeding six months and replaced or a removable subsurface safety device installed if the test was unsatisfactory?	Integral Part of Tubing Device
250.41(b) 5.3	Z	134. If well was completed after August 28, 1969, is the tubing string equipped with a landing nipple to provide for setting a subsurface safety device?	Landing Nipple Installation
250.41(b) 5.3	Z	135. If the well has a high-flow rate or if it produces sand, are areas of turbulence above and below the subsurface safety device protected by a flow coupling or other protective equipment? (For tubing installations after 8–28–69)	Turbulence near Safety Valve
250.41(b) 5.2	Z	136. Has the subsurface saftey device been removed and inspected and maintenance performed as indicated at not more than six month intervals or (for a device set in landing nipple)at not more than 12 month intervals?	Inspection of Subsur-face Safety Device
250.38(a) 5.8	W	137. Are records available (in the field) showing the present status and past history of each subsurface device including dates and details of inspection, testing, repairing, adjustment, and reinstallation?	Records Available in Field

IDENTIFICATION AND OTHER SAFETY EQUIPMENT

250.37 1.1	W	138. Is the platform or large fixed structure identified with signs: a. Located at two diagonal corners of the structure? b. Showing the company name, area, block number, and structure designation? c. With letters 196, and figures not less than 12 inches high?	Identifica-tion of
250.37 1.2	W	139. Is the single well or small structure identified with: a. At least one sign showing the company name, area, block number, and structure designation? b. Letters and figures not less than 3 inches high?	Identifica-tion of Single Well or Small Structure

250.46 Coast Guard	P	140. For all personnel on the platform are there sufficient: a. Life jackets? b. Life rafts (on manned platforms)?	Personnel Safety
8.2.A(2)(d)	P(2)	141. Are all pneumatic shut-in control lines equipped with fusible material at strategic points?	Fusible Material
8.2.A(2)(j)	W	142. Has a standard procedure for testing safety equipment been prepared and posted in a prominent place on the platform?	Test Procedure Posted
		AUXILIARY POWER SUPPLY	
8.2.A(4)	P	143. Is there an auxiliary electrical power supply installed to provide emergency power capable of operating all electrical equipment required to maintain safety of operation, in the event the primary electrical power supply fails?	Auxiliary Power Supply
		ELECTRICAL SYSTEMS	
8.2.A(8)(b),(c)	P(2)	144. Are all electrical generators, motors, and lighting systems installed, protected, and maintained in accordance with the most current edition of the National Electric Code and API RP 500A and B, as appropriate? (Note: Marine-armored cable or metal-clad cable may be substituted for wire in conduit in any area).––Effective 10–30–71.	General Electrical Systems
8.2.A(8)(a)	P(2)	145. Are all engines equipped with low-tension ignition systems containing rigid connections and shielded wiring capable of preventing an electrical discharge sufficient to ignite a combustible mixture? (Not applicable to diesel engines)––Effective 10–30–71	Ignition Systems
		PRESSURE SENSOR TESTING	
8.2.A(1)(f)	P(2)	146. Are all pressure sensors equipped to permit testing with an external pressure source?	Pressure Sensors
8.2.A(1)(f)	P(2)	147. Have all pressure sensors been tested for proper pressure settings monthly: a. On flowlines? b. On pressure vessels?	Pressure Sensor Tests
8.2.A(2)(f)	P(2)	148. If four consecutive monthly pressure sensor tests are consistent to the satisfaction of the Supervisor are pressure sensor tests being conducted quarterly: a. On flowlines? b. On pressure vessels?	
8.8.A(2)(f)	W	149. Are the results of all pressure sensor tests recorded and maintained in the field?	Pressure Sensor Test Records

		FIRE CONTROL SYSTEM	
8.2.A(6)(e)	W	150. Is a diagram of the firefighting system, which shows the location of all equipment, posted on a prominent place on the platform?––Effective 10–30–71	Diagram Posted
250.46 8.2.A(6)(d) Coast Guard	P	151. Are portable fire extinguishers located in the living quarters and in other strategic areas?––Effective 10–30–71	Fire Extinguishers
8.2.A(6)(a)	P	152. Is a fixed automatic water spray system installed in all inadequately ventilated well head areas as these areas are defined in paragraph 9 of API RP 500A and in accordance with the most current edition of *National Fire Protection Association's Pamphlet No. 15?*––Effective 10–30–71	Water Spray System in Wellhead Area
8.2.A(6)(b)	P	153. Is a firewater (or chemical) system of rigid pipe with fire hose stations installed to provide protection in areas where production handling equipment is located?––Effective 10–30–71	Fire Water System
8.2.A(6)(c)	P	154. Is there an alternate fuel or power source installed to provide continued pump operation during platform shut down unless an alternative firefighting system is provided?––Effective 10–30–71	Alternate Source or System
8.2.A(6)(c)	P	155. Are firewater systems pumps inspected and test-operated weekly?––Effective 10–30–71	Pump Inspections
8.2.A(6)(c)	W	156. Are records of the firewater system pump tests maintained in the field?––Effected 10-30–71	Field Records
		GAS DETECTION SYSTEM	
8.2.A(7)(f)	W	157. Is a diagram of all gas detection systems showing the location of all gas detection points posted in a prominent place on the platform?––Effective 10–30–71	Diagram Posted
8.2.A(7)(a)	P	158. Are gas detection systems located in all enclosed areas containing gas handling facilities or equipment and in other areas which are classified as hazardous areas as defined in API RP 500 and the *National Electric Code?*––Effective 10–30–71	Location
8.2.A(7)(b)	P	159. Are all gas detection systems capable of continuously monitoring for the presence of combustible gas in the areas in which they are located?––Effective 10–31–71	Detection Capability
8.2.A(7)(c)	P	160. Does the gas detection system sound an alarm at some point below the lower explosive limit of 1.3 percent as shown in *Bureau of Mines Bulletin* No. 503?––Effective 10–30–71	Alarm Level
8.2.A(7)(d)	P	161. Does the gas detection system trigger shut-in sequences and operate emergency equipment before the level exceeds 4.9 percent?––Effective 10–30–71	Shut-in Level

8.2.A(5)(b)	P(2)	162. Is the oil content of the disposed water reduced to an average of not more than 50 parts per million?––Effective 10–30–71	Average Oil Content
8.2.A(5)(b)	P(2)	163. Is the wastewater system maintained in such a manner as to prevent the discharge of an effluent containing in excess of 100 ppm of total oil content?––Effective 10–30–71	Maximum Allowable Oil Content
8.2.A(5)(b)	P(2)	164. Is there a point prior to discharge into the receiving waters where a representative sample of the treated effluent can be obtained?––Effective 10–30–71	Sampling Station
8.2.A(5)(b)	P(2)	165. Are four effluent samples taken within a 24-hour period once a month and have the following determinations been made: Temperature, suspended solids, settleable solids, PH, total oil content, and volume obtained?––Effective 10–30–71	Monthly Samples
8.2.A(5)(b)	P(2)	166. Are samples taken and analyses performed in accordance with the American Society for Testing and Materials test D1340, "Oily Matter in Industrial Waste Water" or has the Supervisor approved an alternate method?––Effective 10–30–71	Method of Testing

PIPELINES (OFFICE RECORDS)

250.19(b) 9.2	W	167. Has the operator submitted for the Supervisor's approval, an application in duplicate, with drawings, plans, etc. as outlined in OCS Order No. 9.2 prior to installation?	Pipeline Application
250.19(b) 9.1.D	PL(2)	168. Is pipeline hydro-tested to 1.25 times the designed working pressure for a minimum of two hours prior to use?	Testing
250.19(b) 9.3	W	169. Has the operator notified the Supervisor after completion of installation of pipelines and submitted diagrams, drawings, and the records of the original hydrostatic pressure test as outlined in OCS Order No. 9.3?	Notification of Installation
250.19(b) 9.1.E	W	170. Are monthly inspection records maintained including dates, methods, and results for all inspections and submitted annually by April 1 to the Supervisor?	Records

PIPELINES (FIELD OPERATIONS)

250.19(b) 9.1.B	PL(2)	171. Is pipeline protected from loss of metal due to corrosion that would endanger the strength and safety of the lines, by extra thickness of metal, protective coating or cathodic protection?	Corrosion Protection
250.19(b) 9.1.C	PL(2)	172. Is pipeline installed in such a manner as to be compatible with trawling operations and other OCS users?	Other OCS Users
250.19 9.1.E	PL(2)	173. Is pipeline inspected for leaks at least monthly?	Inspection

250.19(b) 9.1.E	W	174. Are reports indicating the cause, effect, and remedial action taken regarding all leaks submitted to the Supervisor within one week following the occurrence of leaks?	Reporting Leaks

ABANDONMENT

250.44 250.92(c)	R	175. Did the operator submit a detailed statement of the proposed work for abandonment of any well; provide the information specified in 30 CFR 250.92(c), and obtain approval prior to commencing operations?	Notice of Intent to Abandon
250.15 250.44 3.1.A	R(3)	176. Are all cement plugs spaced to extend 100 feet below the bottom to 100 feet above the top of any oil, gas, and fresh water zones in uncased portions of the well?	Spacing of Plugs
250.15 250.44 3.1.B.	R(3)	177. Is a cement plug placed in the deepest casing string (where there is open hole below the casing) as specified in OCS Order No. 3.1.B(1),(2), or (3)?	Isolation of Open Hole
250.15 250.44 3.1.B(3)	R(3)	178. Is the bridge plug set as specified in OCS Order No. 3.1.B(3) tested prior to placing subsequent plugs?	Testing Bridge Plug
250.15 250.44 3.1.C.	R(3)	179. Are perforated intervals plugged or isolated as specified in OCS Order No. 3.1.C?	Plugging Perforations
250.15 250.44 3.1.D	R(3)	180. Are all casing stubs plugged as specified in OCS Order No. 3.1.D.	Plugging of Casing Stubs
250.15 250.44 3.1.E.	R(3)	181. Is any annular space, extending to the Gulf floor and open to drilled hole below, plugged with cement?	Plugging of Annular Space
250.15 250.44 3.1.F.	R(3)	182. Is the surface plug of at least 150 feet, with the top plug within 150 feet of the Gulf floor, and in the samllest string of casing extending to the surface?	Surface Plug
250.15 250.44 3.1.G	R(3)	183. Is the first plug below the top 150 foot plug tested as specified in OCS Order No. 3.1.G?	Testing Plugs
250.15 250.44 3.1.H	R(3)	184. Do each of the hole intervals between plugs contain mud fluid of sufficient density?	Mud
250.15 250.44 3.2	R(3)	185. Are temporarily abandoned drilling wells plugged in accordance with OCS Order 3.2?	Temporarily Abandoned Wells
250.15 250.44 3.1.I	W	186. Have all casing and piling been severed and removed to at least 15 feet below the Gulf floor?	Casing Removal
250.15 250.44 3.1.I	W	187. Has the location been dragged to clear the well site of any obstructions?	Removal of Obstructions

250.92(d)	W	188. Did the operator submit a detailed report of the manner in which the abondonment was accomplished?	Subsequent Report

NOTIFICATION OF ACCIDENTS AND FIRES

250.45	W(4)	189. Has the Supervisor been notified immediately of all serious accidents and all fires?	Immediate Notification
250.45	W	190. Has a full written report been submitted within ten days?	Written Report
250.45	W	191. Has the Supervisor been notified of any other unusual condition, problem, or malfunction within 24 hours?	Other Unusual Conditions

ENFORCEMENT POLICY

OBJECTIVES

The adoption of the enforcement policy outlined below has the following objectives:

1. To reduce the incidents of noncompliance leading to loss of life, property, and damage to the environment.

2. To establish a uniform enforcement policy to be applied to all operations affecting OCS lands in the Gulf of Mexico.

The following paragraphs describe the various enforcement actions and provide criteria for selecting them.

ENFORCEMENT ACTION

Each inspection of a lessee's field operations and records may result in the detection of incidents of noncompliance (INCs). Specific INCs will require specific actions (see Table 1). All INCs detected during an inspection will be discussed orally with the lessee's representative and reported to the lessee in writing.

FIELD PROCEDURE

1. No INC's are detected. -- No action needs to be taken.

2. INC's are detected. -- If any INC's are detected, the inspection team leader will orally advise the company representative of the specific problems encountered and issue a written warning on Experimental Form OCS-4.

3. Special action required. -- The specific enforcement action to be taken for each INC detected is listed in Table 1. If a shut-in of a producing zone, platform, pipeline etc., is called for, the inspection team leader will contact the District Engineer and describe the facility's condition and the implications of the shut-in. The District Engineer will authorize the shut-in action prescribed in Table 1. If the District Engineer cannot be contacted because of communication problems, the inspector will take the appropriate action indicated in Table 1 and notify the District Engineer as soon as possible.

   The inspection team leader will provide the company representative with written orders to shut-in the zone(s), platform, facility, etc., on Experimental Form OCS-4 after explaining orally the reason for the shut-in. The inspector will make it clear to the company representative that the facility cannot be returned to operation until the site has been reinspected and the company has received clearance from the District Engineer to do so. If the inspector conducting the reinspection cannot contact the District Engineer because of communication problems he may authorize the resumption of operations and will notify the District Engineer as soon as possible thereafter. Any waiver of the reinspection procedure must be given by the Regional Supervisor.

OFFICE PROCEDURE

1. Warning(s) issued by inspector. -- The written warning given to the company representative by the inspector must be returned to the District Engineer within 7 days and certified that all incidents of noncompliance have been corrected.

   a. Warning form not returned within 7 days. -- The District Engineer will orally notify the company, and confirm in writing, to shut in the equipment involved, if it is an operating item, the District Engineer will forward the warning notice to the Regional Supervisor with the recommendation that the company should be fined for all INCs detected and failure to comply with the warning notice.

   b. Company requests an extension of time. -- The District Engineer is authorized to grant a 7-day extension for the return of Experimental Form OCS-4 if the company requests it. The extension will be confirmed in writing and a copy will be sent to the Regional Supervisor. If the company still fails to return the Form, the District Engineer will take the action described in paragraph 1a.

2. Shut-in of facility. -- As soon as the inspector reports a shut-in, the District Engineer will notify the company of the action in writing and instruct them not to resume operations until the field site has been reinspected. The confirmation of the shut-in action will also instruct the company to inform the District Engineer when they are ready for reinspection. In any event, the certification of compliance (Experimental Form OCS–4) must be returned to the District Engineer within 7 days.

   a. Company fails to request reinspection and to certify compliance within 7 days. -- District Engineer will transmit copies of Experimental Form OCS–4 and the confirmation of shut-in to the Regional Supervisor with a recommendation to fine the company for the INCs detected during inspection and for not complying with the District Engineer's orders.

   b. Company requests reinspection within 7 days. -- The District Engineer will attempt to schedule a reinspection as soon as the existing workload permits. The inspector will inspect the site, and if all INCs have been corrected and no new INCs are detected the District Engineer will authorize the company to resume operations. If the order is given orally, the District Engineer will confirm it in writing.

   c. Company requests waiver of reinspection. -- If the company feels that it cannot wait for the reinspection, they may request a waiver of the requirement from the Regional Supervisor provided that they first have returned Experimental Form OCS–4 certifing that all INCs have been corrected.

3. Shut-in of drilling wells. -- If an inspector shuts-in a drilling well, the District Engineer will notify the company of the action in writing. In order to minimize the dangers of maintaining an open hole, the inspector will remain at the drilling site or return to it as soon as the INC has been corrected to reinspect and pick up the certification of compliance from the company. Orders from the District Engineer to resume operations will be passed orally with written confirmation.

4. Subsurface safety valves. -- If the inspection reveals that there is no subsurface safety valve installed, and no waiver has been granted, the District Engineer will notify the Regional Supervisor, in writing, with recommendation for fine(s). The Supervisor will transmit this recommendation with his comments to Washington. Washington will recommend the fine(s) to the Justice Department.

Table 1.—*Action required for OCS incidents of noncompliance action detected*

[The following incidents of noncompliance have been identified as requiring specific enforcement action]

INC No.	Action	INC No.	Action	INC No.	Action	INC No.	Action
1	W/P(1)	49	Z	97	Z	145	P(2)
2	P	50	Z	98	W	146	P(2)
3	P	51	Z	99	Z	147	P(2)
4	P/Z	52	Z	100	Z	148	P(2)
5	Z	53	Z	101	Z	149	W
6	P/Z	54	Z	102	Z	150	W
7	W	55	Z	103	Z	151	P
8	W	56	Z	104	W	152	P
9	W	57	Z	105	Z	153	P
10	W	58	Z	106	Z	154	P
11	W	59	Z	107	Z	155	P
12	W	60	Z	108	Z	156	W
13	W	61	Z	109	W	157	W
14	W	62	Z	110	P(2)	158	P
15	W	63	Z	111	P(2)	159	P
16	P(2)	64	Z	112	P(2)	160	P
17	P(2)	65	W	113	P(2)	161	P
18	W	66	Z	114	P(2)	162	P(2)
19	W	67	P	115	P(2)	163	P(2)
20	Z	68	P(2)	116	P(2)	164	P(2)
21	Z	69	P(2)	117	P(2)	165	P(2)
22	W	70	P	118	P(2)	166	P(2)
23	Z	71	P	119	P(2)	167	W
24	W	72	Z	120	P(2)	168	PL(2)
25	Z	73	Z	121	P(2)	169	W
26	Z	74	Z	122	P(2)	170	W
27	Z	75	Z	123	PL	171	PL(2)
28	Z	76	Z	124	PL	172	PL(2)
29	Z	77	Z	125	PL	173	PL(2)
30	Z	78	Z	126	PL	174	W
31	Z	79	W	127	P(2)	175	R
32	Z	80	Z	128	P	176	R(3)
33	W	81	W	129	P	177	R(3)
34	Z	82	W	130	Z	178	R(3)
35	Z	83	W	131	Z	179	R(3)
36	Z	84	W	132	Z	180	R(3)
37	Z	85	W	133	Z	181	R(3)
38	Z	86	P	134	Z	182	R(3)
39	Z	87	W	135	Z	183	R(3)
40	Z	88	W	136	Z	184	R(3)
41	Z	89	W	137	W	185	R(3)
42	Z	90	W	138	W	186	W
43	Z	91	W	139	W	187	W
44	W	92	W	140	P	188	W
45	Z	93	Z	141	P(2)	189	W(4)
46	Z	94	Z	142	W	190	W
47	Z	95	Z	143	P	191	W
48	Z	96	W	144	P(2)		

ACTION CODE

W – Written Warning –– Operator is notified of INC and required to make necessary changes within 7 days to comply with applicable Regulation or OCS Order.

P – platform shut-in

Z – zone (well) shut-in

R – re-enter well at Survey request

PL – pipeline shut-in

NOTES ON ENFORCEMENT ACTION

1. Warning if pollution is not present, platform shut-in if pollution exists.

2. Only that equipment on which INC's occur will be shut-in (zones, wells, pipelines, vessels, etc.)

3. If INC is detected District Engineer will require well to be re-entered, plugs drilled out and the well replugged in conformance with approved procedures and action witnessed by a Survey representative. A waiver of this requirement must be approved by the Regional Oil and Gas Supervisor.

4. If this violation is detected the District Engineer will notify the Supervisor with a recommendation for fine(s), for transmittal to Washington for action.

EXP. FORM (OCS-2)
REV. 1973

U. S. GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
OCS LEASE MANAGEMENT PROGRAM
INSPECTION REPORT
DRILLING
DISTRICT_____

LEASE NO._____
WELL NO._____
DATE._____

AREA:_____ BLOCK:_____ OPERATOR:_____
DRILLING CONTRACTOR:_____ CO. REPRESENTATIVE:_____
RIG NAME:_____ WATER DEPTH:_____ TOOL PUSHER:_____
DRILLING DEPTH:_____ APPROVED DEPTH:_____ WELL STAGE:_____
DATE LAST DETAILED USGS INSPECTION:_____

TYPE FACILITY:	
Drillship	
Platform	
Platform w/Tender	
Self Elevating	
Submersible	
Semi-submersible	

TIME SUMMARY:
INSPECTION:_____HRS.
WAITING:_____HRS.
TRAVEL:_____HRS.
TOTAL TIME:_____HRS.

Ave. No. Personnel_____

Max. No. Personnel_____

RIGS SHUT-DOWN

INC. NO.	DATE & TIME SHUT-DOWN	DATE & TIME RESUMED OPERATIONS	HOURS SHUT-DOWN	REMARKS

APPROVED DEPARTURES

INC. NO.	DATE ISSUED	REMARKS

REMARKS

GENERAL HOUSEKEEPING CONDITIONS:

SIGNATURE OF INSPECTORS

Rev.

LEASE NO._____
DATE:_____

	ENF. ACT.	PINC. NO.	POTENTIAL INCIDENT OF NON-COMPLIANCE						CODE NO.
Safety	W	65	Is rig or platform properly identified?	#chk	1	Y	N	NA	362
	W	66	For all personnel on the rig are there sufficient: Life jackets and Life rafts? (maximum number of personnel).	#chk		Y	N	NA	23
Power System	NUMBER OF GENERATORS, MOTORS, LIGHTING SYSTEMS						TOTAL		
	Z	68	Are electrical generators, motors, lighting system installed, protected, maintained in accordance with National Electrical Code, API RP 500A-B?	#chk	1	Y	N	NA	33
Pollution Control	W/Z	1	Is facility equipped with necessary curbs, gutters and drains or drip pans?	#chk	1	Y	N	NA	39
	Z	2	Are all drains piped to a tank or sump which will maintain oil at a level to prevent discharge into the Gulf waters, or has an alternate method been approved?	#chk	1	Y	N	NA	334
	Z	4	Is operator not disposing of oil, oily solids, or drilling mud containing oil into the waters of the Gulf?	#chk	1	Y	N	NA	336
	Z	5	Is operator not disposing of drilling mud containing toxic substances into Gulf waters without neutralization?	#chk	1	Y	N	NA	50
	Z	6	Is operator not disposing of liquid waste materials containing harmful substances into Gulf waters without neutralization?	#chk	1	Y	N	NA	338
	W	7	Are solid waste materials incinerated or transported to shore? (underline method)	#chk	1	Y	N	NA	53
	W	8	Is pollution inspection made daily?	#chk	1	Y	N	NA	55
	W	14	Do operators notify each other upon observation of equipment malfunction or pollution resulting from another's operation?	#ch		Y	N	NA	
	W	10	Are spills and leaks recorded and records available for inspection?	#chk	1	Y	N	NA	58
	Z	16	Is sewage disposal system installed?	#chk	1	Y	N	NA	27
	W/Z	17	Does effluent contain 50 PPM or less of BOD, 150 PPM or less of suspended solids, minimum chlorine residual of 1.0 mg/liter after minimum retention time of 15 minutes?	#chk	1	Y	N	NA	29

REMARKS

Rev.

LEASE NO._____
DATE:_____

Casing Program

	Size Hole	Casing Size	Casing Grade	Casing wt/ft	Casing w/press.	Casing set at	W/ Sx. Cem.	Bond Log ?	Rem. Act. ?	Press. PSI	Test Time	WOC Time
Dr./Struc.	X		X		X		X	X	X	X	X	X
Cond.												
Sur.												
Inter.												
Prod.												
Liner												

Drilling Program

	APPROVED - FROM DISTRICT FILE						
	Size Hole	Size	Grade	wt/ft.	w/press.	Set at	Sx. Cement
Dr./Struc.	X		X		X		X
Cond.							
Sur.							
Inter.							
Prod.							
Liner							

Casing Program

ENF. ACT.	INC. NO.	POTENTIAL INCIDENT OF NON-COMPLIANCE					CODE NO.
Z	28	Was appropriate remedial action taken, if surface casing did not cement properly?	#chk	Y	N	NA	88
Z	31	Was liner seal pressure tested and recorded in log?	#chk	Y	N	NA	91
Z	32	Have casing strings been pressure tested?	#chk	Y	N	NA	93
W	33	Was test recorded in driller's log?	#chk	Y	N	NA	95
Z	34	Was remedial actio : taken if needed?	#chk	Y	N	NA	96
Z	35	Was there proper WOC time before drilling out?	#chk	Y	N	NA	97

Mud Program

ENF. ACT.	INC. NO.	POTENTIAL INCIDENT OF NON-COMPLIANCE					CODE NO.
Z	36	Are sufficient quantities of mud available?	#chk 1	Y	N	NA	98
Z	38	Is mud properly conditioned before starting out of hole?	#chk 1	Y	N	NA	100
Z	39	Is annulus filled b fore mud level drops 100'?	#chk 1	Y	N	NA	101
Z	40	Is mechanical device used to measure mud to fill hole?	#chk 1	Y	N	NA	102
Z	41	Was procedure in OCS Order 2 used if swabbing of fluid influx indicated?	#chk 1	Y	N	NA	103

LAST TIME EVENT OCCURRED?: WHAT OCCURRED?:
RECORDED IN LOG?: DEPTH?:

Z	42	Is mud testing equipment on platform?	#chk 1	Y	N	NA	104
Z	43	Are mud tests performed daily, or as warranted?	#chk 1	Y	N	NA	105

FROM FIELD INFORMATION				APPROVED - FROM FILE		
Depth	Mud Weight	Viscosity	Type/Base	Mud Weight	Viscosity	Type/Base

Z	44	Are mud tests recorded in log?	#chk 1	Y	N	NA	106
Z	45	Is recording mud pit level indicator installed and used?	#chk 1	Y	N	NA	349
Z	46	Is audio or visual warning on pit level indicator installed and used?	#chk 1	Y	N	NA	350
Z	48	Is mud return indicator installed and used?	#chk 1	Y	N	NA	352

Rev.

LEASE NO._____
DATE:_____

BOP REQUIREMENTS

SAFETY EQUIPMENT — DRILLING

ENF. ACT.	INC. NO.	POTENTIAL INCIDENT OF NON-COMPLIANCE						CODE NO.
Z	195	Is hydraulically controlled bag-type BOP installed on drive pipe if conductor casing is to be eliminated?	#chk	1	Y	N	NA	
Z	49	Is hydraulically controlled bag-type BOP installed on conductor casing?	#chk	1	Y	N	NA	115
Z	50	Are diverter valves on conductor casing below BOP?	#chk	1	Y	N	NA	116
Z Z	52a 53a	Are remotely controlled, hydraulically operated blowout preventers installed?	#chk		Y	N	NA	117 122
Z Z	52c 53c	Is choke line installed?	#chk		Y	N	NA	119 124
Z Z	52d 53d	Is kill line installed?	#chk		Y	N	NA	120 125
Z Z	52e 53e	Is fill-up line installed?	#chk		Y	N	NA	121 126
Z	51	If the BOP is on the Gulf floor, are the choke and kill lines equipped to permit the diversion of hydrocarbons and other fluids?	#chk		Y	N	NA	
WP OF STACK		DATE OF LAST TEST		TESTED TO				
Z	61	Is the bag-type blow-out preventer tested with water to 70% of WP of stack or casing?	#chk	1	Y	N	NA	358
Z	62	Is the bag-type blow-out preventer actuated on drill pipe weekly?	#chk	1	Y	N	NA	147
W	64a	Is test information for all blow-out preventor tests recorded in driller's log?	#chk	1	Y	N	NA	149
Z	59a	Is BOP tested with water to WP of stack or casing: when initially installed?	#chk		Y	N	NA	140
Z	59b	before drilling out on succeeding casing strings?	#chk		Y	N	NA	141
Z	59c	not less than once each week?	#chk		Y	N	NA	142
Z	59d	following repairs?	#chk		Y	N	NA	143
Z	60	Are piperams actuated each trip, at least daily?	#chk		Y	N	NA	144
Z	196	Are blind rams actuated each trip?	#chk		Y	N	NA	
Z	54	Are there accumulators or accumulators and pumps to repeatedly operate BOP?	#chk	1	Y	N	NA	127
DIFFERENT SIZE(S) OF DRILL PIPE								
Z	57	Are inside BOP assembly and drill string safety valves to fit all sizes of pipe maintained in the open position on the rig floor?	#chk		Y	N	NA	356
Z	58	Is Kelly Cock installed below swivel and full opening safety valve installed at bottom of Kelly?	#chk	2	Y	N	NA	357
KELLY COCK WRENCH?	Y	N	WHERE LOCATED?					
Z	63	Is BOP drill conducted weekly for each crew?	#chk		Y	N	NA	148
W	64b	Is drill recorded in log?	#chk		Y	N	NA	360

FORM (OCS-3)
REV 6-73

U. S. GEOLOGICAL SURVEY
CONSERVATION DIVISION
BRANCH OF OIL AND GAS OPERATIONS
OCS LEASE MANAGEMENT PROGRAM
INSPECTION REPORT
PRODUCTION
DISTRICT:_____

LEASE NO:_____
DATE:_____

AREA:_____ BLOCK:_____ PLATFORM:_____ FIELD:_____
OPERATOR:_____ REPRESENTATIVE:_____
ANNOUNCED:_____ UNANNOUNCED:_____ MANNED:_____ UNMANNED:_____

TIME SUMMARY
INSPECTION:_____HRS.
WAITING:_____HRS.
TRAVEL:_____HRS.
TOTAL TIME:_____HRS.

WELL STATUS:
POW_____PGW_____
OSI_____GSI_____
OTHER (SPECIFY)_____
DATE LAST DETAILED USGS INSP._____
DATE REINSPECTED:_____

ENFORCEMENT ACTION

ITEM OR WELL NO.	ENF. ACT. (W, Z, PL, P (2), P)	INC. NO.	DATE & TIME SHUT IN		DATE & TIME OPENED		EST. LOST PROD (BO & MCF)

WAIVERS

PINC. NO.	DATE ISSUED	REMARKS

REV 6-73

LEASE NO:_____
DATE:_____

PART I - GENERAL

ENF. ACT.	INC. NO.	POTENTIAL INCIDENT OF NON-COMPLIANCE					CODE NO.
W	139	Is structure properly identified?	#chk 1	Y	N	NA	406
P	140a	For all personnel on the platform are there sufficient: Life jackets?(# persons on board at time of inspect.)	#chk	Y	N	NA	24
P	140b	Life rafts? (on manned platform)(# persons on board at time of inspection) No. and size:	#chk	Y	N	NA	26
P	143	Is there an auxiliary electrical power supply?	#chk 1	Y	N	NA	32
NUMBER OF GENERATORS, ELECTRICAL MOTORS, LIGHTING SYSTEMS						TOTAL:	
P(2)	144	Are electrical generators, motors, lighting system installed, protected, maintained in accordance with National Electrical Code, API RP 500A-B?	#chk	Y	N	NA	34
P(2)	145	Are gas engines equipped with low-tension ignition systems, rigid connections, shielded wiring?	#chk	Y	N	NA	36
W/P (1)	1	Is platform equipped with necessary curbs, gutters and drip pans properly piped to sumps?	#chk 1	Y	N	NA	40
P	2	Does sump automatically maintain oil at a level to prevent discharge into the Gulf waters, or has an alternate method been approved? (# of sumps).	#chk	Y	N	NA	335
P	4	Is operator not disposing of oil, oily solids or other harmful waste material into Gulf?	#chk 1	Y	N	NA	337
P(2)	16	Is sewage disposal system installed?	#chk 1	Y	N	NA	28
P(2)	17	Does effluent contain 50 PPM or less of BOD, 150 PPM or less of suspended solids, min. chlorine residual of 1.0 mg/liter after min. retention time of 15 min?	#chk 1	Y	N	NA	30
		Is fusible material used in pneumatic lines at the following strategic locations?					
P(2)	141a	Well heads	#chk	Y	N	NA	
P(2)	141b	Prod vessels	#chk	Y	N	NA	
P(2)	141c	Pumps, engines, generators	#chk	Y	N	NA	
P(2)	141d	Other strategic locations	#chk	Y	N	NA	
		Are remote shut-in controls quick opening and at the following strategic locations?					
P	129a	Helicopter deck	#chk	Y	N	NA	250
P	129b	Exit stairway	#chk	Y	N	NA	251
P	129c	On each boat landing	#chk	Y	N	NA	252
P	129d	Other strategic locations	#chk	Y	N	NA	253
P	150	Is the diagram for fire fighting and gas detection systems, and standard procedure for testing safety equipment posted in prominent place? (underline items which are NA).	#chk 3	Y	N	NA	266
		Are fire extinguishers located in the following strategic locations?					
		Strategic Area / Size / Type / Cond. / Date Chgd.					
P	151a	Well	#chk	Y	N	NA	
P	151b	Production	#chk	Y	N	NA	
P	151c	Compressor	#chk	Y	N	NA	
P	151d	Generator	#chk	Y	N	NA	
P	151e	Pump	#chk	Y	N	NA	
P	151f	Living Quarters	#chk	Y	N	NA	
P	151g	Other	#chk	Y	N	NA	
P	153a	Firewater system of rigid pipe or chemical system in production handling area?	#chk 1	Y	N	NA	271
P	153b	If chemical system is used in lieu of water system, has approval been granted?	#chk 1	Y	N	NA	407
P	154	Is there an alternate fuel or power source to provide continued firewater system pump operation or alternate firefighting system?	#chk 1	Y	N	NA	272
W	155	Are firewater system pumps tested weekly and test records maintained in field?	#chk 1	Y	N	NA	273
P	158	Is a continuous monitoring gas detection system located in enclosed area containing gas handling facilities or equipment? (# of such areas)	#chk	Y	N	NA	278
P	160	Does gas detection system sound alarm below lower explosive limit of 1.3% and trigger shut-in sequences to operate emergency equipment when levels reach not more than 4.9%?(4.9% of LEL)	#chk 1	Y	N	NA	280

REV 6-73

LEASE NO: _____
DATE: _____

PART II - PLATFORM PIPELINES

DEPARTING

SIZE	PRODUCT	DEP TO	REC PROD FROM FAC YES/NO	O.P. RANGE PSI HI/LO		PIPELINE PRESS SENSORS HI SET PSI	PIPELINE PRESS SENSORS LO SET PSI	PIPELINE PRESS SENSORS SHUTS WELL YES/NO	PIPFLINE PUMP HI SET PSI	PIPFLINE PUMP LO SET PSI

INCOMING

SIZE	PRODUCT	INCOM FROM	DEL PROD TO FAC YES/NO	O.P. RANGE PSI HI/LO		AUTO S. I. VALVE OPERABLE YES/NO	AUTO S. I. VALVE ACT BY PLAT AUTO SI SYS YES/NO	AUTO S. I. VALVE ACT BY IND REM SI SYS YES/NO	CHECK VALVE YES/NO

BI - DIRECTIONAL

SIZE	PROD-UCT	INCOM FROM	DEP TO	DEL. PROD TO FAC YES/NO	REC PROD FROM FAC YES/NO	O.P. RANGE PSI HI/LO		PRESS SENSOR HI SET PSI	PRESS SENSOR LO SET PSI	PRESS SENSOR SHUTS WELL YES/NO	AUTO S.I. VALVE OPER-ABLE YES/NO	AUTO S.I. VALVE ACT BY PLAT AUTO SI SYS YES/NO	AUTO S.I. VALVE ACT BY IND REM SI SYS YES/NO

ENF. ACT.	INC. NO.	POTENTIAL INCIDENT OF NON-COMPLIANCE					CODE NO.
		ARE DEPARTING PIPELINES EQUIPPED WITH:					
PL	123a	Operable high and low pressure sensor? (not less than two (x) # departing lines).	#chk	Y	N	NA	298
PL	123b	High and low pressure sensors designed to S.I. wells if production received from platform? (not less than two (x) # departing lines receiving production from platform).	#chk	Y	N	NA	423
PL	127a	Are pipeline pumps equipped with operable hi-lo pressure sensors? (two (x) # of pumps).	#chk	Y	N	NA	326
		ARE INCOMING PIPELINES EQUIPPED WITH:					
PL	124a	Operable automatic shut-in valve actuated by platform automatic and remote shut-in system if production delivered to platform? (# incoming lines delivering production).	#chk	Y	N	NA	400
PL	124b	Operable automatic shut-in valve actuated by platform or independent remote shut-in system if production not delivered to platform? (# incoming lines not delivering production).	#chk	Y	N	NA	408
PL	124c	Check valve? (# incoming lines).	#chk	Y	N	NA	409
		ARE BI-DIRECTIONAL PIPELINES EQUIPPED WITH:					
PL	125a	Operable hi and low pressure sensors? (# bi-directional lines).	#chk	Y	N	NA	410
PL	125b	Hi and low pressure sensors designed to shut-in wells if production received from platform? (# bi-directional lines receiving production).	#chk	Y	N	NA	411
PL	125c	Operable automatic shut-in valve actuated by platform automatic and remote shut-in system if prod. delivered to platform? (# bi-directional lines delivering production).	#chk	Y	N	NA	412
PL	125d	Operable automatic shut-in valve actuated by platform or independent remote shut-in system if production not delivering to platform? (# bi-directional lines not delivering production).	#chk	Y	N	NA	413

REV 6-73

LEASE NO: _____
DATE: _____

PART III - WELL BAY AREA

WELL NO.	SIGN YES/NO	NO. MAS VAL	TBG PSI FLO	TBG PSI SI	CSG PSI	HI-PILOT SET PSI	LO-PILOT SET PSI	SURFACE SAFETY VALVE HOLDS/ LEAKS OR FLAGGED	CHK VAL HOLDS/ LEAKS	WORKING PRESS-PSI TREE	WORKING PRESS-PSI FLOWLINES & HEADERS

REV 6-73

LEASE NO: _____
DATE: _____

PART IV - PRODUCTION VESSELS

TYPE VESSEL	W.P. (PSI)	OPERATING RANGE (PSI) HIGH	OPERATING RANGE (PSI) LOW	HIGH-SENSOR (PSI) PREV	HIGH-SENSOR (PSI) PRES	LOW-SENSOR (PSI) PREV	LOW-SENSOR (PSI) PRES	OPERABLE LEVEL S.I. YES/NO HIGH	OPERABLE LEVEL S.I. YES/NO LOW	RELIEF VALVE SET (PSI)	W.P. * SEP INLET (PSI)	DISCH. TO FLARE YES/NO

REV 6-73

LEASE NO: _____
DATE: _____

PART V - FIELD RECORDS

For zone status use: POW, PGW, OSI, GSI, TA, P & A, WIW, GIW

		SURF SAF VAL		SUBSURFACE SAFETY DEVICE							
WELL NO.	ZONE STATUS	HI PILOT LAST SET PSI	LO PILOT LAST SET PSI	TBG INSTALLED AFTER 12/1/72 YES/NO	TYPE S.S.S.V.	DEPTH SET	DATE LAST REMOVED, INSTALLED, OR TESTED	WAIVER YES/NO	LAND-ING NIPPLE YES/NO	FLOW COUP-LING YES/NO	AVE. DAILY WELL PROD. RATE

REV 6-73

LEASE NO:__ _____
DATE:_____

SUBSURFACE SAFETY DEVICES

ENF. ACT.	INC. NO.	POTENTIAL INCIDENT OF NON-COMPLIANCE						CODE NO.
Z	192a	Is each tubing installation made after Dec. 1, 1972, equipped with a device activated by the platform shut-in or independent remote shut-in system if well has shut-in tubing pressure of less than 4,000 PSIG? (# such completions) (count approved subsurface controlled devices as NA).	#chk		Y	N	NA	419
Z	192b	Is each tubing installation made after Dec. 1, 1972, equipped with a subsurface controlled device (or other approved device) if well has shut-in tubing pressure of 4,000 PSIG OR GREATER? (# such completions) (count approved surface controlled devices as NA).	#chk		Y	N	NA	422
W	102	Is operation of automatic wellhead valves tested weekly and results recorded and maintained in field?(# such zones not blind-flanged or plugged?	#chk		Y	N	NA	176
W	103	Is holding pressure of automatic wellhead valves tested monthly and results recorded and maintained in field? (# such zones not blind-flanged or plugged).	#chk		Y	N	NA	177
		FIELD RECORDS						
W	10	Are spills and leaks properly reported and recorded and records available for inspection?	#chk	1	Y	N	NA	59
W	107	Are check valves tested monthly (or quarterly if applicable) and results recorded and maintained in field? (# zones not blind-flanged or plugged?	#chk		Y	N	NA	246
W	147	Are pressure sensors for zones and all pressurized vessels tested for proper settings monthly (or quarterly if applicable) and results recorded and maintained in field? (total sensors for zones and vessels).	#chk		Y	N	NA	237
P(2)	165	If produced water is discharged into the Gulf, are 4 samples taken during 24-hour period, once a month, and analyzed?	#chk		Y	N	NA	262
P(2)	162	Is the oil content of disposed waste water reduced to an average of not more than 50 PPM with a maximum of not more than 100 PPM? Date_____, Maximum PPM_____, Average PPM_____, Location sampling station _____.	#chk	1	Y	N	NA	259

ATTACHMENT J

EQUIPMENT AVAILABLE FOR EMERGENCY OIL SPILL CONTROL AND CLEAN-UP IN THE GULF OF MEXICO

(INFORMATION TAKEN FROM CLEAN GULF ASSOCIATES' OPERATIONS MANUAL)

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

1. Spill Booms

A. Mississippi River Delta Area

Operator	Type	Length	Location
Amoco Production Company	3½" Figerglass	310'	Bastian Bay
Chevron Oil Company	6" Slick Bar	200'	Cal-Ky Empire, La., Terminal
	T and T	500'	Cal-Ky Empire, La., Terminal
	6" Slick Bar	300'	Main Pass Block 69 Terminal
	D. R. Smart	200'	Cal-Ky Empire, La., Terminal
	D. R. Smart	400'	Main Pass Block 69
	T and T	485'	Romere Pass
	D. R. Smart	300'	Romere Pass
	6" Slick Bar	300'	Bay Coquille, #1 Battery
	D. R. Smart	600'	Bay Coquille, #1 Battery
	D. R. Smart	100'	Southwest Pass E-2
	6" Slick Bar	500'	Southwest Pass W-1
	D. R. Smart	150'	Southwest Pass W-1
	D. R. Smart	200'	Southwest Pass E-5
	6" Slick Bar	200'	Southwest Pass W-6
	D. R. Smart	150'	Southwest Pass W-6
	6" Slick Bar	200'	West Delta Terminal
	D. R. Smart	200'	Barataria
	D. R. Smart	200'	Delta Farms
	T and T	1,060'	Venice Base
	Johns-Manville	1,300'	Venice Base
	Kain	700'	Venice Base
	D. R. Smart	1,300'	Venice Base
	Navy Type Portable Floating Saucer Pump Skimmer	1	Romere Pass
			Pascagoula Refinery

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OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

1. Spill Boom

A. Mississippi River Delta Area (Cont'd)

Operator	Type	Length	Location
Chevron Oil Company	36" Uniroyal Boom	1,500'	Pascagoula Refinery
	36" Coastal TT Boom	500'	Pascagoula Refinery
	18" Uniroyal Boom	1,000'	Pascagoula Refinery
	Parker Systems Snare (1516)	25 boxes	Pascagoula Refinery
	Navy Type Boom Construction and Launching Assembly	1	Venice Base
	Boom Floats, Hose, Chain, Buoys, Etc.	Miscellaneous	Venice Base
Exxon Company, USA	Oil Boom	240'	Southeast Pass
	Uniroyal	200'	Potash
Gulf Oil Company - U.S.	36" Bennett (Inshore)	1000'	Venice
	D. R. Smart (Inshore)	200'	Bayou Couba Field
	D. R. Smart (Inshore)	300'	Grand Bay Field
	T. T. (Inshore)	1200'	Quarantine Bay
	Uniroyal (Inshore)	750'	West Bay Field
	Slick Bar (Inshore)	200'	Venice
	D. R. Smart (Inshore)	250'	Venice
	Slick Bar (Inshore)	400'	Ostrica Terminal
	D. R. Smart (Inshore)	180'	Ostrica Terminal

OCS

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

1. Spill Boom

A. Mississippi River Delta Area (Cont'd)

Operator	Type	Length	Location
Placid Oil Company	Slick Bar	300'	Port Sulphur
Shell Oil Company	Bennett	600'	Venice
	T-T	3200'	East Bay
	M-P	200'	Venice
	6" Slickbar	200'	Ysclosky Gas Plant
Texaco, Pipeline		2000'	Harvey
Texaco, Inc.		200'	Lafitte
		500'	
		500'	Lake Salvador
		200'	Pilot Town

B. Grand Isle-LaFourche-Terrebonne Area

Operator	Type	Length	Location
Amoco Production Company	3½" Fiberglass	480'	Lake Long Field
	3½" Fiberglass	400'	Bayou Des Allemands
	3½" Fiberglass	300'	Lake Raccourci Field
	3" Fiberglass	250'	Lake Boeuf Field

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

OIS

1. Spill Booms

B. Grand Isle - LaFourche - Terrebonne Area (Cont'd)

Operator	Type	Length	Location
Chevron Oil Company	T and T	200'	Bayou Fourchon Terminal
	D. R. Smart	500'	Bayou Fourchon Terminal
	T And T	300'	Morgan City
	Sea Curtin	500'	Morgan City
Continental Oil Company New Orleans Division	6"	1100'	Grand Isle
Exxon Company, USA	8" Jatson	420'	Grand Isle
	8" Jatson	80'	Pelican Island
	6" Slickbar	250'	Benton Canal
Gulf Oil Company-U.S.	36" Coastal (Inshore)	600'	Timbalier Bay
	Slick Bar (Inshore)	200'	Bully Camp Field
	36" Bennett (Inshore)	1000'	Leeville
	Slick Bar (Inshore)	200'	Leeville
Mobil Oil Corporation	200' Floating Boom (6") Trailer-Mounted		Clifton Ridge Tank Farm Lake Charles
Shell Oil Company	6" Slickbar	500'	Gibson Unit
		500'	Chauvin Unit
Texaco, Inc.	6"	400'	Bay deChene
	Home Made	500'	Bay St. Elaine
	Slick Bar	500'	Caillou Island

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

1. Spill Boom

B. Grand Isle-LaFourche-Terrebonne Are (Cont'd)

Operator	Type	Length	Location
Texaco, Inc.	6"	200'	Cocodrie
		200'	Davant Terminal Convent
	Home Made	500'	Dog Lake
	6"	200'	Golden Meadow
	Home Made	500'	
	6"	2000'	Houma
	Home Made	500'	
	Home Made	500'	Lake Barre
		500'	Lake Pelto
	6"	200'	Leeville
	Home Made	500'	
	10" Home Made	250'	Plumb Bob

C. Morgan City-Atchafalaya Area

Operator	Type	Length	Location
Amoco Production Company	5" Float w/8" Skirt (Spill Trol)	300'	South Florence Field
Exxon Company, USA	6" Slickbar	650'	Avery Island
	6" Slickbar	200'	Weeks Island
	6" Slickbar Styrofoam	400'	Duck Lake
		250'	Avery Island
	18" Uniroyal	350'	Bayou Sale
	36" Uniroyal	2000'	Baton Rouge Refinery
Kerr-McGee Corporation	TT 4'	1000'	Morgan City

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

1. Spill Booms

C. Morgan City-Atchafalaya Area (Cont'd)

Operator	Type	Length	Location
Mobil Oil Corporation	(2) 40' boom for boat 6" x 18" apron	1036'	Morgan City
Phillips Petroleum Company	12" Sea-Curtain Boom	600'	Morgan City
Shell Oil Company	6" Slickbar	500'	Morgan City
		300'	Weeks Island
		1700'	Weeks Lake Verret Unit
		750'	Bayou Sorrel Unit
Tenneco	6"	300'	Cocodrie
Texaco Pipeline	6"	200'	Avery Island
	6"	300'	Baton Rouge
Texaco, Inc.	10" Home Made	200'	Berwick
		200'	Fausse Point
		50'	Houseshoe Bayou
		200'	Lake Mongonlois
	6"	(2)300'	Morgan City
Texaco Pipeline	6"	2,000'	New Iberia
Texaco, Inc.	10" Home Made	100'	West Cote Blanche Bay
		500'	West Cote Blanche Bay
	3' Plastic, Nylon, Rubber	520'	West Cote Blanche Bay

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

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1. Spill Booms

C. Morgan City-Atchafalaya Area (Cont'd)

Operator	Type	Length	Location
Union Oil Co. of Calif.	6"	320'	East Lake Palourde

D. Vermilion-Cameron Area

Operator	Type	Length	Location
Amoco Production Company	6" x 10" 6" x 10"	200' 1000'	Grand Chenier Hackberry
Exxon Company, USA	6" Slickbar	250'	Pecan Island
Cities Service Oil Company	6" 12"	2000' 150' (3-50' sections)	Lake Charles Lawson Field-Crowley
Continental Oil Company	18" Uniroyal	360'	Gibbstown Barge Terminal
Shell Oil Company	6" Slickbar	650'	Black Bayou Unit

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

1. Spill Booms

D. Vermilion-Atchafalaya Area (Cont'd)

Operator	Type	Length	Location
Texaco, Inc.	10" Home Made	150'	East Hackberry

E. Texas Coast Area

Operator	Type	Length	Location
American Oil Company	6"	2450'	Texas City
Atlantic-Richfield	6"	200'	Aransas Pass
Atlantic Pipeline	6"	100'	Longview
Chevron Oil Company	T and T	200'	Sabine Terminal
	D. R. Smart	500'	Sabine Terminal
	T and T	500'	Padre Island (Rockport,
	D. R. Smart	500'	Cedar Point (Gal. Bay)
Exxon Company, USA	18" Uniroyal	1500'	Baytown Refinery
	36" Uniroyal	1200'	Baytown Refinery
Gulf Oil Company- U.S.	18" Uniroyal (Inshore)	320'	Goose Creek

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

1. Spill Booms

E. Texas Area (Cont'd)

Operator	Type	Length	Location
Shell Oil Company	None		
Sun Oil Company	18" Uniroyal	700'	Sour Lake
	18" Uniroyal	1000'	Nederland
	6" Slick Bar	400'	Nederland
	36" Bennett	2000'	Beaumont (In Stock)
	18" Bennett	2000'	Beaumont (In Stock)
	6" Slick Bar	3000'	Houston
Texaco, Inc.	6"	(2)100'	Orange
		500'	Galena Park
		500'	Port Arthur
		500'	Port Neches
Texaco Pipeline		200'	Houston

2. Skimmers & Vacuum Equipment

A. Mississippi River Delta Area

Operator	Skimmers	Type	Location
Amoco Production Company		36" x 44" Floating Skimmer	Lake Long Field
Chevron Oil Company	1	36" Floating	Barataria

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

2. Skimmers & Vacuum Equipment

A. Mississippi River Delta Area (Cont'd)

Operator	Skimmers	Type	Location
Chevron Oil Company	**3	Shell	Venice Base
	1	Barge Mounting	Venice Base
	1	36" Floating	Romere Pass
	*11	AK	Venice Base
	2	35 BBL Capacity Vacuum Trucks Complete w/Skimmers	Pascagoula Refinery
Exxon Company, USA		2" Saucer Skimmer Pump	Southeast Pass
	(2)	3½" Saucer Skimmer Pump	Harvey
		2" Saucer Skimmer Pump	Lake Washington
		3½" Saucer Skimmer Pump	Potash
Gulf Oil Company-U.S.		Acme (Saucer) Skimmer	Bayou Couba Field
		Water Master Skimmer	Grand Bay Field
		Swiss-type Skimmer	Quarantine Bay
		Self-propelled Skimmer Barge	Quarantine Bay
		Water Master Skimmer	West Bay Field
		Water Master Skimmer	Venice
		Acme (Saucer) Skimmer	Venice
		Acme (Saucer) Skimmer	Ostrica Terminal
Phillips Petroleum Company		Float Skimmer Model 3SK-FS Capacity 200 GPM	Buras

EXHIBIT 3

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

2. Skimmers & Vacuum Equipment

A. Mississippi River Delta Area (Cont'd)

Operator	Type	Location
Shell Oil Company	(1) Shell Oil Scoop	Venice
	(1) 24" Swiss Olea 111 Skimmer	Venice
	Skimmer Pump 700 GPM	East Bay
	Portable Cent Sump Pump (100 PSIG Air) 300 GPM	Ysclosky Plant
Texaco, Inc.	Floating Skimmer (3HP)	Garden Island Bay
	(2) Floating Skimmer (3HP)	Lafitte
	suction unit (3HP)	Pilot Town

B. Grand Isle-LaFourche-Terrebonne Area

Operator	Type	Location
Chevron Oil Company	Don Wilson	Bay Marchand
	AK	Bayou Fourchone Terminal
Continental Oil Company New Orleans Division	Skid-Deutz Vacuum Pump (15HP)	Grand Isle
	Diesel-Diaphram Pump (5HP)	

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

2. Skimmers & Vacuum Equipment

B. Grand Isle-LaFourche-Terrebonne (Cont'd)

Operator	Type	Location
Exxon Company, USA	3½" Saucer Skimmer Pump	Thibodaux
	Acme 400 Sk.	Grand Isle
	Acme 400 Sk.	Pelican Isle
Gulf Oil Company-U.S.	Parker Oil Hawg	Timbalier Bay
	Acme Tunnel Skimmer	Bully Camp Field
	Acme (Saucer) Skimmer	Leeville
Shell Oil Company	(2) Acme FS-3	Chauving & Gibson
	Portable 3 x 3 Cent Pump (5 HP Gas)	Lapice
	Portable 3 x 3 Cent Pump (5 HP Gas)	St. Gabriel
Texaco, Inc.	Float Skimmer (3 HP)	Bay deChene
	Float Skimmer (3 HP)	Bay St. Elaine
	Cent. Pump (9 HP) 200 GM	
	Cent. Pump (9 HP) 200 GM	Caillou Island
	Suction Unit (3 HP)	Cocodrie
	Cent. Pump (2 HP) 60 GPM	
	Section Unit 3 HP	Davant Terminal
	Cent. Pump (9 HP) 200 GPM	Dog Lake
	Cent. Pump (2 HP) 60 GPM	
	(4) Suction Units (3 HP)	Houma
	(2) Float Skimmer (3 HP)	
	Cent. Pump (2 HP) 60 GPM	
	Float Skimmer (1 ½ HP)	

OFFSHORE OPERATORS COMMITTEE
INVENTORY OF KNOWN RESOURCES AVAILABLE FOR
EMERGENCY OIL SPILL CONTROL & CLEANUP
MAY 1973

2. Skimmers & Vacuum Equipment

C. Morgan City - Atchafalaya Area

Operator	Type	Location
Chevron Oil Company	2 AK	Morgan City
Exxon Company, USA	Skimmer Pump w/26" Float	Bayou Sale
	Skimmer Pump (Floating)	Morgan City
	Skimmer Pump w/26" Float	Avery Island
	Skimmer Pump w/26" Float	Duck Lake
Shell Oil Company	(2) Portable Vacuum Pump (3 HP Gas)	Bayou Sorrel Ur
	Float Skimmer Model 3SK-FS	Weeks Island Ur
	Float Skimmer (3 HP)	West Lake Verre
	Portable Center Pump	
Texaco, Inc.	Suction Unit (3 HP)	Lafayette
	Float Skimmer suction unit (3 HP)	New Iberia
	Suction Unit (3 HP)	
	Float Skimmer (3 HP)	West Cote Blanc
	Float Skimmer (1 $\frac{1}{2}$ HP)	
Union Oil Co. of California	(2) Float Skimmer (2 HP air) 120 GPM	East Lake Palo

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2. Skimmers & Vacuum Equipment

D. Vermilion-Cameron Area

Operator	Type	Location
Amoco Production Company	Acme Skimmer Pump w/4 HP Engine	Hackberry
Cities Service Oil Company	Floating Skimmer Pump Model FS400-ASK 4" Float Complete w/Gasoline engine 100' of 4" Acme Nylon Hose w/couplings, elbows & floats	Lawson Field-Crowley
Phillips Petroleum Company	Float Skimmer Model 3SK-FS 200 GPM	Abbeville
Shell Oil Company	(2) Float Skimmer Model 3SK-FS Portable Vacuum Pump (3 HP)	Black Bayou Unit

E. Texas Gulf Coast Area

Operator	Type	Location
Chevron Oil Company	2 AK 1 Floating 1 Floating	Padre Island (Rockport, Padre Island (Rockport, Cedar Poing

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2. Skimmers & Vacuum Pumps

E. Texas Gulf Coast Area (Cont'd)

Operator	Type	Location
Exxon Company, USA	6 Skimmer Pumps-Air Driven	Baytown Refinery
Texaco, Inc.	(1) 4 HP Floating skimmer	Orange, Texas

3. Spraying Equipment

Operator	Type	Capacity	Location
Chevron Oil Company	1 Self-Elevating Boat (60' water depth) equipped with 700 GPM fire pumps and spray nozzle mounted on 46' crane boom.		Bay Marchand
	7 65'-85' Utility Vessels equipped with fire pumps and deck-mounted spray nozzles.		Bay Marchand
Exxon Company, USA	Trailer Mounted-Self Contained	150 Gal.	Bayou Sale
	2 Hale Pumps w/proportioning device	200 GPM	Grand Isle
	5" x 6" B. J. Pump		Breton Canal
	3" Trailer Mounted Pump		Morgan City

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3. Spraying Equipment (Cont'd)

Operator	Type	Capacity	Location
Mobil Oil Corporation	(5) Portable Hi Press Pumps & Guns		Morgan City
	"Huss" Helicopter Spray Unit	84 Gal.	
Shell Oil Company	John Bean Spray Pump	150 Gal.	Black Bayou Unit
	Husdon 32-B-1 Sprayer	50 Gal.	Good Hope Unit

4. Absorbents

Type	Quantity	Location	Owner
Hay	25 bales	Lake Long Field	Amoco Production
	50 bales	Lake Raccourci Field	
	25 bales	Grand Chenier	
	20 bales	Hackberry	
Fibre Perl Sorbent	75 bags	Lawson Field-Crowley, La.	Cities Service O:

390

In addition to the equipment of the Offshore Operators Committee, the Clean Gulf Associates also lease the following equipment from Halliburton Services:

A. Fast Response Open Sea and Bay Skimmer System. Location: 1 @ Venice; 1 @ Intracoastal City.

B. High Volume Open Sea Skimmer System. Location: Hoss barge, Halliburton dock, Grand Isle.

C. Shallow Water Skimmer System. Location. 1 @ Grand Isle. Selection of a new model to be located at Venice is underway.

D. Auxiliary Shallow Water Skimmers and Booms. Location: Grand Isle (2 Parker oil Hawg skimmers; Bennet Flexiflo Boom/100' section with skid). Venice (2 Swiss Olea III type skimmers, Bennet Flexiflow Boom/100' section with skid). Intracoastal City (1 Parker oil Hawg and 1 Swiss Olea III).

E. Helicopter Underslung Spray System (HUSS). Location: Grand Isle (one complete system); Venice (one complete system).

F. Water Fowl Rehabilitation Units and Bird Scarers. Location: Grand Isle (24 automatic scare away propane guns; 1 water fowl rehabilitation unit). Venice (same as Grand Isle).

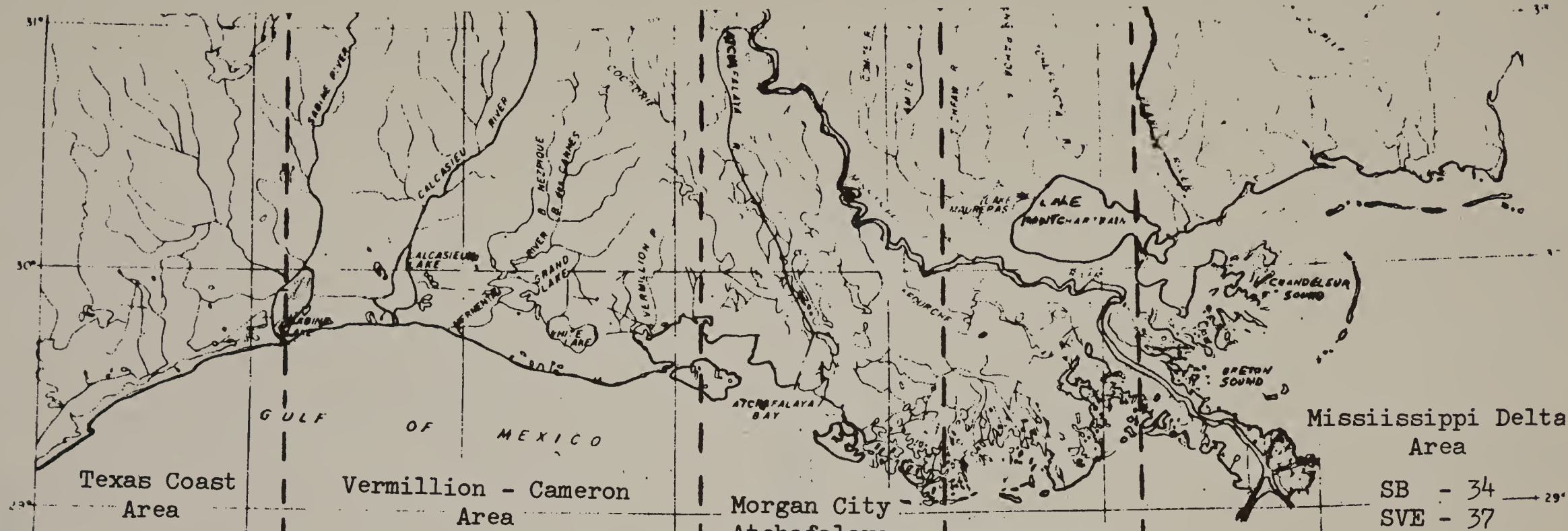
G. Polyurethane Foam Generators and Pads. Location. Venice; Grand Isle; Intracoastal City.

H. Two New Units - Fast Response System. Location, Panama City, and Bradenton, Florida.

Proposed Acquitions:

1 - Fast response system	Cameron, Louisiana
2 - High volume open sea skimmer	Intracoastal City, Louisiana
3 - Open sea boom	Intracoastal City, Louisiana
4 - Shallow water skimmer system	Intracoastal City, Louisiana
5 - Three (3) Hand Skimmer systems	Intracoastal City, Louisiana Grand Isle, Louisiana Venice, Louisiana

EQUIPMENT AVAILABLE FOR EMERGENCY OIL SPILL CONTROL AND CLEANUP IN THE GULF OF MEXICO



Texas Coast Area

SB - 18
SVE - 10
SP - 22
H - 9
FWA - 48

Vermillion - Cameron Area

SB - 28
SVE - 4
SP - 13
H - 8 MC
FWA - 0

Morgan City - Atchafalaya Area

SB - 72
SVE - 14
SP - 31
H - 17 MC
FWA - 3 MC
2 LF
5

Grand Isle - La Fourche - Terre Bonne Area

SB - 25
SVE - 39
SP - 30
H - 6 GI
6 LV
1 HM
1 DL
14
FWA - 1 LV
4 HM
5

Missiissippi Delta Area

SB - 34
SVE - 37
SP - 55
H - 8 VN
5 EM
2 TC
1 NO
16
FWA - 6 NO
4 TC
3 VN
13

Cities Where Available

MC - Morgan City
CM - Cameron
LF - Lafayette
GI - Grand Isle
LV - Leeville
HM - Houma
DL - Dulac
VN - Venice
EM - Empire
TC - Toca
NO - New Orleans

Total Area

Spray Equipment - 20

Types of Equipment

SB - Service Boats
SVE - Skimmer & Vacuum Equip.
H - Helicopters
FWA - Fixed Wing Aircraft
SP - Spill Booms

SCALE
50 0 50 100 150 MILES

ATTACHMENT K

SAMPLE OCS LEASE FORM

Form 3300–1
(February 1971)
(formerly 3330–1)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL AND GAS LEASE OF SUBMERGED LANDS UNDER THE OUTER CONTINENTAL SHELF LANDS ACT

Office	
Serial Number	
Cash Bonus	
Rental Rate	
Minimum Royalty Rate	Royalty Rate

This lease is made and effective as of (hereinafter called the Effective Date) by and between the United States of America (hereinafter called the Lessor), by the , Bureau of Land Management, its authorized officer, and (hereinafter called the Lessee). In consideration of the cash payment heretofore made by the Lessee to the Lessor and in consideration of the promises, terms, conditions and covenants contained herein, the parties hereto agree as follows:

Sec. 1. Statutes and Regulations. This lease is made pursuant to the Outer Continental Shelf Lands Act of August 7, 1953 (67 Stat. 462; 43 U.S.C. Secs. 1331, *et seq.*) (hereinafter called the Act). This lease is subject to all the provisions of the Act and to all the terms, conditions and requirements of the valid regulations promulgated by the Secretary of the Interior (hereinafter called the Secretary) thereunder in existence upon the effective date of this lease, all of which are incorporated herein and, by reference, made a part hereof. This lease shall also be subject to regulations hereafter issued by the Secretary pursuant to his authority under section 5(a)(1) of the Act to prescribe and amend at any time such rules and regulations as he may determine to be necessary and proper in order to provide for the prevention of waste and for the conservation of the natural resources of the Outer Continental Shelf, and for the protection of correlative rights therein, which regulations shall be deemed incorporated herein and, by reference, made a part hereof when promulgated.

Sec. 2. Rights of Lessee. The Lessor hereby grants and leases to the Lessee the exclusive right and privilege to drill for, mine, extract, remove and dispose of oil and gas deposits, except helium gas, in or under the following-described area of the Outer Continental Shelf of the United States:

containing approximately acres (hereinafter referred to as the leased area), together with:

(a) the nonexclusive right to conduct within the leased area geological and geophysical explorations in accordance with applicable regulations;

(b) the nonexclusive right to drill water wells within the leased area and to use water produced therefrom for operations pursuant to the Act free of cost, provided that such drilling is conducted in accordance with procedures approved by the Regional Oil and Gas Supervisor of the Geological Survey (hereinafter called the "Supervisor"); and

(c) the right to construct or erect and to maintain within the leased area all artificial islands, platforms, fixed or floating structures, sea walls, docks, dredged channels and spaces, buildings, plants, telegraph or telephone lines and cables, pipelines, reservoirs, tanks, pumping stations, and other works and structures necessary to the full enjoyment of the rights granted by this lease, subject to compliance with applicable laws and regulations.

Sec. 3. Obligations of Lessee. The Lessee agrees:

(a) *Rentals and royalties* (1) To pay rentals and royalties as follows:

Rentals. With respect to each lease year commencing prior to a discovery of oil or gas on the leased area, to pay the Lessor on or before the first day of each such year, a rental of per acre or fraction thereof.

Minimum royalty. To pay the Lessor at the expiration of each lease year commencing after discovery a minimum royalty of per acre or fraction thereof or, if there is production, the difference between the actual royalty required to be paid with respect to such lease year and the prescribed minimum royalty, if the actual royalty paid is less than the minimum royalty

Royalty on production To pay the Lessor a royalty of percent in amount or value of production saved, removed, or sold from the leased area. Gas of all kinds (except helium and gas used for purposes of production from and operations upon the leased area or unavoidably lost) is subject to royalty.

(2) It is expressly agreed that the Secretary may establish minimum values for purposes of computing

royalty on products obtained from this lease, due consideration being given to the highest price paid for a part or for a majority of production of like quality in the same field, or area, to the price received by the Lessee, to posted prices, and to other relevant matters. Each such determination shall be made only after due notice to the Lessee and a reasonable opportunity has been afforded the Lessee to be heard.

(3) When paid in value, royalties on production shall be due and payable monthly on the last day of the month next following the month in which the production is obtained. When paid in production, such royalties shall be delivered at pipeline connections or in tanks provided by the Lessee. Such deliveries shall be made at reasonable times and intervals and, at the Lessor's option, shall be effected either (i) on or immediately adjacent to the leased area, without cost to the Lessor, or (ii) at a more convenient point closer to shore or on shore, in which event the Lessee shall be entitled to reimbursement for the reasonable cost of transporting the royalty substance to such delivery point. The Lessee shall not be required to provide storage for royalty taken in kind in excess of tankage required when royalty is paid in value. When payments are made in production the Lessee shall not be held liable for the loss or destruction of royalty oil or other liquid products in storage from causes over which the Lessee has no control.

(b) *Bonds.* To maintain at all times the bond required prior to the issuance of this lease and to furnish such additional security as may be required by the Lessor if, after operations or production have begun, the Lessor deems such additional security to be necessary.

(c) *Wells.* (1) To diligently drill and produce such wells as are necessary to protect the Lessor from loss by reason of production on other properties or, in lieu thereof, with the consent of the Supervisor, to pay a sum determined by the Supervisor as adequate to compensate the Lessor for failure to drill and produce any such well. In the event that this lease is not being maintained in force by other production of oil or gas in paying quantities or by other approved drilling or reworking operations, such payments shall be considered as the equivalent of production in paying quantities for all purposes of this lease.

(2) After due notice in writing, to diligently drill and produce such other wells as the Secretary may reasonably require in order that the leased area or any part thereof may be properly and timely developed and produced in accordance with good operating practice.

(3) At the election of the Lessee, to drill and produce other wells in conformity with any system of well spacing or production allotments affecting the area, field, or pool in which the leased area or any part thereof is situated, which is authorized or sanctioned by applicable law or by the Secretary.

(d) *Payments.* To make all payments to the Lessor by check, bank draft or money order payable as indicated herein unless otherwise provided by regulations or by direction of the Secretary. Rental, royalties, and other payments shall be made payable to the United States Geological Survey and tendered to the Supervisor, *except* that filing charges, bonuses, and first year's rental shall be made payable to the Bureau of Land Management and remitted to the Manager of the appropriate field office of that Bureau.

(e) *Inspection.* To keep open at all reasonable times for the inspection of any duly authorized representative of the Lessor, the leased area and all wells, improvements, machinery and fixtures thereon and all books, accounts, and records relative to operations and surveys or investigations on or with regard to the leased area or under the lease.

(f) *Conduct of operations.* To conduct all operations under this lease in accordance with applicable law and regulations.

(g) *Indemnification* To indemnify and save the Lessor harmless against and from any and all claims of any nature whatever, including without limitation claims for loss or damage to property or injury to persons, caused by, or resulting from, any operation on the leased area conducted by or on behalf of the Lessee; provided that the Lessee shall not be held responsible to the Lessor under this subsection for any loss, damage, or injury caused by, or resulting from: (1) any negligent action of the Lessor other than the exercise or performance of (or the failure to exercise or perform) a discretionary function or duty on the part of a Federal agency or an employee of such an agency, whether or not the discretion involved is abused; or (2) the Lessee's compliance with an order or directive of the Lessor against which an appeal by the Lessee under 30 CFR 250.81 is filed before the cause of action for such a claim arises and is pursued diligently thereafter.

(h) *Equal Opportunity Clause.* The Lessee agrees that, during the performance of this lease:

(1) The Lessee will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Lessee will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Lessee agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Lessor setting forth the provisions of this Equal Opportunity clause.

(2) The Lessee will, in all solicitations or advertisements for employees placed by or on behalf of the Lessee, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

(3) The Lessee will send to each labor union or representative of workers with which Lessee has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Lessor, advising the labor union or workers' representative of the Lessee's commitments under this Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Lessee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Lessee will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Secretary of the Interior and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Lessee's noncompliance with the Equal Opportunity clause of this lease or with any of said rules, regulations, or orders, this lease may be canceled, terminated or suspended in whole or in part and the Lessee may be declared ineligible for further Federal government contracts or leases in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, as amended, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Lessee will include the provisions of Paragraphs (1) through (7) of this subsection 3(h) in

every contract, subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, as amended, so that such provisions will be binding upon each contractor, subcontractor or vendor. The Lessee will take such action with respect to any contract, subcontract or purchase order as the Secretary may direct as a means of enforcing such provisions including sanctions for noncompliance, *provided, however*, that in the event the Lessee becomes involved in, or is threatened with, litigation with a contractor, subcontractor or vendor as a result of such direction by the Secretary, the Lessee may request the Lessor to enter into such litigation to protect the interests of the Lessor.

(i) *Certification of nonsegregated facilities* By entering into this lease, the Lessee certifies that Lessee does not and will not maintain or provide for Lessee's employees any segregated facilities at any of Lessee's establishments, and that Lessee does not and will not permit Lessee's employees to perform their services at any location, under Lessee's control, where segregated facilities are maintained. The Lessee agrees that a breach of this certification is a violation of the Equal Opportunity clause in this lease. As used in this certification, the term "segregated facilities" means, but is not limited to, any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. Lessee further agrees that (except where Lessee has obtained identical certifications from proposed contractors and subcontractors for specific time periods) Lessee will obtain identical certifications from proposed contractors and subcontractors prior to the award of contracts or subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that Lessee will retain such certifications in Lessee's files; and that Lessee will forward the following notice to such proposed contractors and subcontractors (except where the proposed contractor or subcontractor has submitted identical certifications for specific time periods): Notice to prospective contractors and subcontractors of requirement for certification of nonsegregated facilities. A Certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a contract or subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each contract and subcontract or for all contracts and subcontracts during a period (i.e., quarterly, semiannually, or annually).

(j) *Assignment of lease.* To file for approval with the appropriate office of the Bureau of Land Management any instrument of transfer of this lease, or any interest therein, required to be filed under applicable regulations, within the time and in the manner prescribed by the applicable regulations.

Sec. 4. Term. This lease shall continue for a period of 5 years from the effective date of this lease and so long thereafter as oil or gas may be produced from the leased area in paying quantities, or drilling or well reworking operations, as approved by the Secretary, are conducted thereon.

Sec. 5. Cooperative or Unit Plan. Lessee agrees that, within 30 days after demand by Lessor, Lessee will subscribe to and operate under such cooperative or unit plan for the development and operation of the area, field, or pool, or part thereof, embracing lands subject to this lease as the Secretary may determine to be practicable and necessary or advisable in the interest of conservation. Where any provision of a cooperative or unit plan of development which has been approved by the Secretary, and which by its terms affects the leased area or any part thereof, is inconsistent with a provision of this lease, the provision of such cooperative or unit plan shall govern.

Sec. 6. Reservations to Lessor. All rights in the leased area not expressly granted to the Lessee by the Act, the regulations, or this lease are hereby reserved to the Lessor. Without limiting the generality of the foregoing, such reserved rights include:

(a) *Geological and geophysical exploration; rights-of-way* The right to authorize the conduct of geological and geophysical exploration in the leased area which does not interfere with or endanger actual operations under this lease, and the right to grant such easements or rights-of-way upon, through, or in the leased area as may be necessary or appropriate to the working of other lands or to the treatment and shipment of products thereof by or under authority of the United States, its Lessees or Permittees.

(b) *Leases of sulfur and other minerals* The right to grant leases of any mineral other than oil and gas within the leased area or any part thereof. No lease of other mineral shall authorize or permit the Lessee thereunder unreasonably to interfere with or endanger operations under this lease.

(c) *Purchase of production* In time of war, or when the President of the United States shall so prescribe, the right of first refusal to purchase at the market price all or any portion of the oil or gas produced from the leased area, as provided in Section 12(b) of the Act.

(d) *Taking of royalties* The right to determine whether royalty will be taken in the amount or the value of production.

(e) *Helium.* Pursuant to Section 12(f) of the Act, the ownership of and the right to extract helium from all gas produced under this lease.

(f) *Suspension of operations during war or national emergency* Upon recommendation of the Secretary of Defense, during a state of war or national emergency declared by the Congress or President of the United States after August 7, 1953, the authority of the Secretary to suspend any or all operations under this lease, as provided in Section 12(c) of the Act. *Provided*, That just compensation shall be paid by the Lessor to the Lessee.

(g) *Restriction of exploration and operations.* The right, as provided in Section 12(d) of the Act, to restrict from exploration and operations the leased area or any part thereof which may be designated by and through the Secretary of Defense, with the approval of the President, as, or as part of, an area of the Outer Continental Shelf needed for national defense; and so long as such designation remains in effect no exploration or operations may be conducted on the surface of the leased area or the part thereof included within the designation except with the concurrence of the Secretary of Defense; and if operations or production under this lease within any such restricted area shall be suspended, any payments of rentals and royalty prescribed by this lease likewise shall be suspended during such period of suspension of operations and production, and the term of this lease shall be extended by adding thereto any such suspension period, and the Lessor shall be liable to the Lessee for such compensation as is required to be paid under the Constitution of the United States.

Sec. 7. Directional Drilling. A directional well drilled under the leased area from a surface location on nearby land not covered by this lease shall be deemed to have the same effect for all purposes of this lease as a well drilled from a surface location on the leased area. In such circumstances, drilling shall be considered to have

been commenced on the leased area when drilling is commenced on the nearby land for the purpose of directionally drilling under the leased area, and production of oil or gas from the leased area through any directional well surfaced on nearby land or drilling or reworking of any such directional well shall be considered production or drilling or reworking operations (as the case may be) on the leased area for all purposes of this lease. Nothing contained in this paragraph is intended or shall be construed as granting to the Lessee any leasehold interests, licenses, easements, or other rights in or with respect to any such nearby land in addition to any such leasehold interests, licenses, easements, or other rights which the Lessee may have lawfully acquired under the Act or from the Lessor or others.

Sec. 8. Surrender of Lease. The Lessee may surrender this entire lease or any officially designated subdivision of the leased area by filing with the appropriate office of the Bureau of Land Management a written relinquishment, in *triplicate*, which shall be effective as of the date of filing. No surrender of this lease or of any portion of the leased area shall relieve the Lessee or his surety of the obligation to make payment of all accrued rentals and royalties or to abandon all wells on the area to be surrendered in a manner satisfactory to the Supervisor

Sec. 9 Removal of property on termination of leose. Upon the termination of this lease in whole or in part, or the surrender of the lease in whole or in part, as herein provided, the Lessee shall within a period of 1 year thereafter remove from the premises no longer subject to the lease all structures, machinery, equipment, tools, and materials in accordance with applicable regulations and orders of the Supervisor; *provided, however*, that the Lessee may continue to maintain any such property on the leased area for whatever longer period it may be needed, as determined by the Supervisor, for producing wells or for drilling or producing on other leases.

Sec. 10. Remedies in cose of default. (a) Whenever the Lessee fails to comply with any of the provisions of the Act, or of this lease, or of the regulations issued under the Act and in force and effect on the effective date of this lease, the lease shall be subject to cancellation in accordance with the provisions of Section 5(b) of the Act, *provided however*, that the 30-day notice provision applicable to non-producing leases under Section 5(b)(1) of the Act shall also apply as a prerequisite to the institution of any legal action by the Lessor to cancel this lease while it is in a producing status. Nothing in this subsection shall be construed to apply to, or require any notice with respect to, any legal action instituted by the Lessor other than an action to cancel the lease pursuant to Section 5(b) of the Act.

(b) Whenever the Lessee fails to comply with any of the provisions of the Act, or of this lease, or of any regulations promulgated by the Secretary under the Act, the Lessor may exercise any legal or equitable remedy or remedies which the Lessor may have, including appropriate action under the penalty provisions of Section 5(a)(2) of the Act; *however*, the remedy of cancellation of the lease may be exercised only under the provisions of Section 5(b) and Section 8(i) of the Act.

(c) A waiver of any particular violation of the provisions of the Act, or of this lease, or of any regulations promulgated by the Secretary under the Act, shall not prevent the cancellation of this lease or the exercise of any other remedy or remedies under paragraphs (a) and (b) of this section by reason of any other such violation or for the same violation occurring at any other time.

Sec. 11. Heirs and successors in interest. Each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors, or assigns, of the respective parties hereto.

Sec. 12. Unlawful interest. No member of, or Delegate to, Congress, or Resident Commissioner, after his election or appointment, or either before or after he has qualified, and during his continuance in office, and no officer, agent, or employee of the Department of the Interior, except as provided in 43 CFR 7.4(a)(1), shall be admitted to any share or part in this lease or derive any benefit that may arise therefrom; and the provisions of Section 3741 of the Revised Statutes (41 U.S.C. Sec. 22), as amended, and Sections 431, 432, and 433 of Title 18 of the United States Code, relating to contracts made or entered into, or accepted by or on behalf of the United States, form a part of this lease so far as the same may be applicable.

THE UNITED STATES OF AMERICA

_____
(Signature of Lessee)

By _____
(Authorized Officer)

_____
(Signature of Lessee)

_____
(Title)

_____
(Signature of Lessee)

_____
(Date)

_____
(Signature of Lessee)

If this lease is executed by a corporation, it must bear the corporate seal

ATTACHMENT L

SUMMARY OF U.S. COAST GUARD REGULATIONS

ATTACHMENT L

Summary of U.S. Coast Guard Regulations Concerning Offshore Structures as Hazards to Navigation.

The pertinent regulations summarized below are found in the Code of Federal Regulations, No. 33, Navigation and Navigable Waters, Subpart 67.

The varied depths of water and marine commerce traffic routes which exist in the waters over the Outer Continental Shelf, and in other waters, permits the classification of structures according to their location in such waters. The structures in the area seaward of the line of demarcation specified by the Commandant and published in the Federal Register are designated as Class "A". This designation includes OCS platforms.

General requirements for lights specify that where structures have a horizontal dimension of over 50 feet on any one side or in diameter, an obstruction light shall be required on each corner or 90° apart in the case of circular structures. Each light is to have a 360° lens. Where 2 or more obstruction lights are required by the size of the structure, they must be in the same horizontal plane and not less than 20 feet above mean high water.

They shall be installed at a manner that will permit a mariner to hold sight of at least one of them until he is within 50 feet of the structure. Class "A" structure lights shall be white, powered

from a reliable power source and display a quick flash characteristic of approximately 60 flashes per minute. The lights shall be of sufficient candlepower as to be visible at a distance of 5 nautical miles 90% of the nights of the year and they shall be displayed at all times between sunrise and sunset, local time, commencing at the time construction of the structure is begun.

The fog signal shall have a frequency range above 100 cycles and a loudness level of 55 phons and shall be sounded every 20 seconds (sound 2 seconds, silent 18 seconds). For Class "A" structures this signal shall have an audible range of not less than 2 miles, with no wind, in all directions from the structure it marks, whenever visibility is less than 5 miles in any direction.

Changes in these rules may be permitted upon approval of the District Commander when warranted by circumstances such as proximity of structures.

ATTACHMENT M

Federal Register Notice Related to the Two-Tier Nomination System.

Notices

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

POTENTIAL FUTURE OUTER CONTINENTAL SHELF OIL AND GAS LEASING

Request for Comments

In order to implement President Nixon's directive to lease ten million acres in 1975, and in order to implement more fully the purposes and objectives of the Outer Continental Shelf Lands Act, all concerned parties representing the oil and gas industry and the general public are invited and encouraged to submit information concerning areas of interest for offshore oil and gas leasing and to identify problem areas. This is being done in order to help ensure that scarce resources for exploration and development can be employed on the most promising areas consistent with environmental safeguards. Regulations or procedures necessary to implement the other actions announced by the President in his Energy Message relating to Outer Continental Shelf (OCS) leasing will be subsequently published for public comment before they become effective and are not part of this request for comment.

Oil and gas resources of the continental margin, including those beyond the 200 meter depth contour, subject to jurisdiction of the United States are to be considered. Precise continental shelf boundaries between the U.S. and opposite or adjacent states have not, with some exceptions, been agreed. Accordingly certain areas are or may be subject to dispute. No decision has been made to undertake leasing in actually or potentially disputed areas while efforts are being made to reach agreement with the nations concerned. In this connection reference is made to the last sentence of Department of State Public Notice 320, appearing in 35 FR 3301 of February 20, 1970.

Leasing in the Cook Inlet of Alaska and on the Atlantic OCS is contingent on resolution of the litigation between the Federal Government and the State of Alaska and Atlantic coastal states regarding areas of jurisdiction or an alternative resolution of the issues. Further, the President's Council on Environmental Quality is conducting studies of the environmental impact of oil and gas production on the continental shelf of the Atlantic Ocean and the Gulf of Alaska. No leasing in these areas will be permitted unless it is determined that oil and gas exploration and development can proceed in an environmentally satisfactory manner. However, information concerning OCS areas of interest is being requested at this time in order to identify areas of special resource potential and of environmental value. It is the intention of the Department of Interior to conduct a call for tract nominations on more specific areas after consideration of the comments resulting from this request and, where appropriate, after resolution of State/Federal jurisdiction disputes and a determination from the CEQ Atlantic and Gulf of Alaska studies that development can proceed in those areas in an environmentally satisfactory manner. Information received in response to this request will also be considered in determining future leasing plans.

The areas to be commented on are as follows:

	Approximate location
Atlantic Coast OCS areas:	
1. North Atlantic	Bay of Fundy to Cape Code north of 40° N. latitude and south of.[1]
2. Mid-Atlantic	Cape Cod to Cape Hatteras between 40° N. to 35° N. latitude.
3. South Atlantic	Cape Hatteras to Key West south of 35° N. latitude.
Gulf of Mexico OCS areas:	
4. East Gulf	East of 88° W. longitude.
5. Central Gulf	Between 88° W. to 93° W. longitude.
6. West Gulf	West of 93° W. longitude to Mexican border.
Pacific OCS areas:	
7. Southern California Borderland	South of 34° N. latitude to Mexican border (except Santa Barbara Channel).
8. Santa Barbara	Santa Barbara Channel.
9. North and Central California	North of 34° N. latitude to California-Oregon border (except Santa Barbara Channel).
10 Washington-Oregon	Between California-Oregon border and Canadian border.
Alaska OCS areas:	
11. Cook Inlet	South of 60° N. latitude.
12. Southern Aleutian Shelf	West of 153° W. longitude.
13. Gulf of Alaska	North of 56° N. latitude, east of 153° W. longitude.
14. Bristol Bay	South of 58° N. latitude, east of 165° W. longitude.
15. Bering Sea Shelf	U.S. waters south of 66° N. latitude.
16. Beaufort Sea	Between 142° W. and 160° W. longitude.
17. Chukchi Sea	U.S. waters north of 66° N. latitude, west of 160° W. longitude.

[1] The line drawn from a point at:
42°19.9′ N. latitude, 67°46.9′ W. longitude, thence to 42°9.3′ N. latitude, 67°40.0′ W. longitude, thence 41°42.4′ N. latitude, 67°28.8′ W. longitude, and ending at 41°15.3′ N. latitude, 66°58.9′ W. longitude.

Other Areas of interest may be commented upon by appropriate area designation.

Areas of Oil and Gas Resource Potential

The following information is requested:

1. Rank by order of oil and gas potential the areas of interest listed above.

2. Outline of geologic structures of areas of interest shown on appropriate maps. All such information will remain confidential on request. Bureau of Land Management official leasing maps may be obtained from: (1) Gulf of Mexico Outer Continental Shelf Office, Suite 3200, The Plaza Tower, 1001 Howard Avenue, New Orleans, Louisiana 70113; (2) Pacific Outer Continental Shelf Office, 300 North Los Angeles Street, Los Angeles, California 90012; or, (3) Alaska Outer Continental Shelf Office, 121 W. Firewood Lane, Room 270, P.O. Box 1159, Anchorage, Alaska 99510.

3. For each area of interest, estimated time periods required to achieve initial and peak production after a discovery is made, and identification of specific factors that may constrain development for these areas.

Areas of Environmental Concern

The following information is requested:

1. Rank with areas of greatest environmental concern first the above areas and indicate specific environmental values which exist and damages which might be incurred.

2. If possible, indicate the location on maps of specific environmental features or hazards to be considered in these areas if their resource potential is devel-

oped (locations where maps can be obtained listed above).

3. Indicate specific actions which may be taken to reduce or eliminate potential conflicts with oil and gas exploration and development activities.

The information should be submitted no later than May 1, 1974, in envelopes or packets marked "Request for Comments on Potential Future. Outer Continental Shelf Oil and Gas Leasing." The information should be submitted to Director, Attention 730, Bureau of Land Management, Washington, D.C. 20240. Copies of the information should also be sent to the Chief, Conservation Division, No. 600, U.S. Geological Survey, National Center, Reston, Virginia 22092.

GEORGE C. TURCOTT,
Associate Director,
Bureau of Land Management.

Approved: February 15, 1974.

JOHN C. WHITAKER,
Acting Secretary of the Interior.

[FR Doc.74-4126 Filed 2-15-74;4:51 pm]

ATTACHMENT N

COMMENT OF SOLICITOR'S OFFICE, DEPARTMENT OF INTERIOR

ATTACHMENT N

Comment of Solicitor's Office, Department of Interior

The Geological Survey has suggested that because the Department is entering a new era of oil and gas development in the Gulf of Mexico by offering 12 tracts in water depths greater than 200 meters, it would be appropriate to include a discussion of the statutes or conventions which have a bearing upon the issuance of leases in such water depths and environmental protection in the same areas. The following discussion is intended to assist you in responding to this comment.

The provisions of the Outer Continental Shelf Lands Act, 67 Stat. 462, 43 U.S.C. §§ 1331-1343 (1970), are sufficiently flexible and discretionary to accommodate the terms and requirements of existing and future international conventions relating to the law of the sea and pollution of the seas. The Act provides that: (1) the Constitution and laws and civil and political jurisdiction of the United States are applicable to the subsoil and seabed of the OCS and to artificial islands and structures erected for the purpose of exploring for and extracting the natural resources therefrom, 43 U.S.C. § 1333(a)(1); (2) the Secretary may at any time prescribe and amend such rules and regulations which he determines are necessary to protect the natural resources of the Outer Continental Shelf, 43 U.S.C. § 1334(a)(1); and (3) the oil and gas leases

issued by the Secretary shall contain such terms and conditions not otherwise prescribed as the Secretary may establish when the leases are offered, 43 U.S.C. § 1337(b).

Treaties are the law of the land, U.S. Constitution, Article 6, and are made applicable to the subsoil and seabed of the Outer Continental Shelf by Section 1333(a)(1). The 1958 Convention on the High Seas which forbids unreasonable interference with such high sea freedoms as navigation, fishing, scientific research and the laying of submarine cables and pipelines recognizes as a reasonable use of the high seas the structures and devices necessary to explore for and extract the resources of the Outer Continental Shelf.

Likewise, the terms of any convention which may be agreed upon as the result of the International Law of the Sea negotiations currently in progress would be applicable to the OCS beyond the 200 meter depth contour. In particular, any pollution restrictions incorporated in an international treaty would be applicable and if not already encompassed in existing regulations for OCS operations, could be required pursuant to the Secretary's authority in Section 1334(a)(1). Such regulations would be applicable to existing leases as well as leases issued in the future.

Such application of treaty terms and regulatory changes to existing leases is assured by the terms of the leases themselves. The lease

is subject to the terms of the OCS Act, thereby incorporating existing and future treaties, Section 1333(a)(1), and to the terms of all valid regulations in existence upon the date of issuance of the lease or prescribed thereafter as necessary and proper in order to conserve the natural resources of the OCS.

Based upon a memorandum from the Solicitor to the Assistant Secretary - Energy and Minerals, June 22, 1973, (copy attached) the Department published a Notice in the Federal Register, 38 F.R. 30457, Nov. 5, 1973, (copy attached) which superseded language in the prior call for nominations for this sale, 38 F.R. 9839, April 20, 1973, which concerned the President's Oceans Policy Statement of May 23, 1970. The Notice superseding this language was published because the Department determined that the authority in the Outer Continental Shelf Lands Act was such that no additional language in OCS leases or new statutory authority would be necessary for leases issued beyond the 200 meter depth contour in order to comply with or accommodate existing international conventions, the President's Oceans Policy Statement, or the international negotiations currently in progress regarding the law of the sea.

Attachment O

Common Names and Scientific Names for Marine Benthic Animals 1/

1/ From Collard, S. B. and C. N. D'Asaro, 1973. The biological environment--benthic invertebrates of the eastern Gulf of Mexico. p. III G-1 to III G-28. In. J. I. Jones, R. E. Ring, M. O. Rinkel, and R. E. Smith (ed.) A summary of knowledge of the eastern Gulf of Mexico. State Univ. Sys. Florida, Inst. Oceanog., St. Petersburg.

Phylum Porifera

SPONGES

Axinella polycapella	-
Callyspongia vaginalis	Pipe Organ Sponge
Cliona caribboea	Boring Sponge
C. celata	Boring Sponge
C. vastifica	Boring Sponge
Dysidea fragilis	-
Geodia gibberosa	-
Hippiospongia lachne	Bath Sponge
Ircinia campana	Vase Sponge
I. fasciculata	Garlic Sponge
Microciona prolifera	-
Neopetrosia longleyi	-
Speciospongia vesparia	Loggerhead Sponge
Tedania ignis	Fire Sponge

PHYLUM COELENTERATA

Acanella eburnia	Soft Coral
Actinauge longicornis	-
Aiptasia pallida	Anemone
Astrangia solitaria	Solitary Coral
Bebryce grandis	Soft Coral
Bunodosoma cavernata	Anemone
Caligorgia verticillata	Soft Coral
Cerianthiopsis americanus	Cerianthid
Chrysogorgia elegans	Soft Coral
Cladocarpus flexilis	Hydroid
Deltocyathus italicus	Coral
Desmophyllum cristagalli	Coral
Eudendrium carneum	Hydroid
Hydractinia echinata	Hydroid
Leptogorgia setacea	Soft Coral
L. virgulata	Soft Coral
Madrepora oculata	Coral
Millepora alcicornis	Stinging Coral
Muricea laxa	Soft Coral
M. pendula	Soft Coral
Oculina diffusa	Coral
Pennaria tiarella	Hydroid
Phyllangia americana	Coral
Renilla mulleri	Sea Pansy
Scirpearia grandis	Soft Coral
S. funiculina	Soft Coral
Scleracis guadalupensis	Soft Coral
Siderastraea siderea	Coral
Thesea grandiflora	Soft Coral
T. plana	Soft Coral
Trichogorgia viola	Soft Coral
Tubularia crocea	Hydroid
Villogorgia nigrescens	Soft Coral

PHYLUM ANNELIDA

CLASS POLYCHAETA

SEGMENTED WORMS

Amphitrite ornata	-
Arenicola cristata	Lugworm

Axiothella mucosa	Bamboo Worm
Branchioma nigromarginata	-
Chaetopterus variopedatus	-
Cistenides gouldii	-
Diopatra cupres	-
Hydroides hexagonus	-
Neanthes succinea	-
Onuphis magna	-
Polydora websteri	-

PHYLUM MOLLUSCA

CLASS AMPHINEURA

Ischnochiton papillosus	Mesh-pitted Chiton

CLASS GASTROPODA

SNAILS

Anachis avara	Greedy Dove-shell
A. obesa	Fat Dove-shell
Batillaria minima	False Cerith
Bittium varius	Variable Bittium
Bursatella leachi plei	Ragged Sea-Hare
Busycon spiratum	Pear Whelk
Caecum nitidum	Little Horn Caecum
C. pulchellum	-
Cantharus tinctus	Tinted Cantharus
Cassis madagascariensis	Emperor Helmet
Cerithium floridanum	Florida Cerith
C. muscarum	Fly-specked Cerith
C. variable	Dwarf Cerith
Conus stearnsi	Stearn's Cone
C. sozoni	Sozon's Cone
Crepidula convexa	Convex Slipper Shell
C. fornicata	Common Atlantic Slipper-shell
C. plana	Eastern White Slipper-shell
Fasciolaria hunteria	Banded Tulip
F. tulipa	True Tulip
Ficus communis	Common Fig Shell
Fusinus couei	Coue's Spindle
Gaza superba	Superb Gaza
Haminoea antillarum	Antillean Paper-Bubble
H. elegans	Paper-Bubble Shell
H. Succinea	Paper-Bubble Shell
Littorina angulifera	Augulate Periwinkle
L. irrorota	Marsh Periwinkle
L. ziczac	Zebra Periwinkle
Melampus coffeus	Salt Marsh Pulmonate
M. bidentatus	Pulmonate
Melongena corona	Crown Conch
Mitrella lunata	Lunar Dove-shell
Modulus modulus	Atlantic Modulus
Murex beauii	Beau's Murex
M. florifer	Lace Murex
M. fulvesceus	Giant Eastern Murex
Nassarius vibex	Eastern Nassa
Neritina reclivata	Olive Nerite
N. virginea	Virgin Nerite
Odostomia impressa	Impressed Odostome

Oliva sayana	Lettered Olive
Petaloconchus irregularis	Irregular Worm-Shell
Phalium granulatum	Scotch Bonnet
Polinices duplicatus	Shark Eye
Prunum apicinum	Common Atlantic Marginella
Retusa canaliculata	Channeled Barrel-Bubble
Scapella keineri	Volute
S. junonia	Junonia Volute
Sinum perspectivum	Common Baby's Ear
Strombus pugilis	Fighting Conch
Tegula fasciata	Smooth Atlantic Tegula
Terebra cinerea	Gray Atlantic Auger
Thais haemastoma floridana	Florida Rock Shell
Tonna galea	Giant Tun
Turbo castaneus	Chestnut Turban
Urosalpinx tampaensis	Tampa Drill

CLASS PELECYPODA

BIVALVES

Abra aequalis	Common Atlantic abra
Anadara simplex	-
Anodontia alba	Buttercup Lucina
Anomalocardia cuneimeris	Pointed Venus
Anomia simplex	Common Jingle Shell
Amygdalum papyria	Paper Mussel
Argopecten gibbus	Sea Scallop
A. irradians concentricus	Atlantic Bay Scallop
Atrina serrata	Saw-toothed Pen Shell
Brachidontes exustus	Scorched Mussel
B. recurvus	Hooked Mussell
Cardiomya gemma	Cuspidaria
Cardita floridana	Broad-Ribbed Cardita
Chione cancellata	Cross-Barred Venus
Codakia orbiculata	Dwarf Tiger Lucina
Congeria leucophaeta	Conrad's False Mursel
Corbiculata contracta	Contracted Corbula
Crassostrea virginica	Eastern Oyster
Crytopleura costata	-
Cyclinella tenuis	-
Dinocardium robustum	Giant Atlantic Cockle
Diplodonta punctata	Common Atlantic Diplodon
Donax variabilis	Coquina Shell
Dosinia discus	Disk Dosinia
Echinochama cornuta	Florida Spiny Jewel Box
Isognomen alatus	Flat Tree Oyster
Laevicardium mortoni	Morton's Egg Cockle
Lima pellucida	Antillean Lima
Lithophaga aristata	Scissor Data Mussel
L. bisulcata	Mahogany Data Mussel
Macoma constricta	Constricted Macoma
M. mitchelli	-
M. tageliformis	-
Macrocallista nimbosa	Sunray Venus
Mactra fragilis	Fragile Atlantic Mactra
M. cuneiformis	Wedge-Shaded Wood Borer
Martesia striata	Striate Wood Borer
Modiolus demissus	Atlantic Ribbed Mussell
Mulinia lateralis	-
Nuculana acuta	Nut Clam

N. concentrica	Concentric Nut Clam
Ostrea equistris	Crested Oyster
O. frons	Coon Oyster
Pandora trilineata	Say's Pandora
Periploma fragile	Fragile Spoon Clam
Pinna carnea	Amber Pen Shell
Pitar cordata	Schwengel's Venus
Polymesoda caroliniana	Carolina Marsh Clam
Polystira albida	White Giant Turret
Rangia cuneata	Common Rangia
Semele proficua	White Atlantic Semele
Spondylus americanus	Atlantic Thorny Oyster
Tagelus divisus	Purplish Tagelus
T. plebius	Stout Tagelus
Tellina alternata	Alternate Tellin
T. lineata	Rose Petal Tellin
T. promera	Promera Tellin
T. similis	Candy Stick Tellin
T. tampaensis	Tampa Tellin
T. versicolor	DeKay's Dwarf Tellin
Teredo navalis	Shipwork
	PHYLUM ARTHROPODA
	CLASS MEROSTOMATA
Limulus polyphemus	Horeshoe or King Crab
	CLASS CRUSTACEA
	SHRIMPS AND CRABS
Acanthocarpus alexandri	-
Alpheus heterochaelis	Big-Clawed Snapping Shrimp
Aratus pisonii	Mangrove Crab
Arenaeus cribrarius	Beach Crab
Balanus amphitrite	Barnacle
B. declivis	-
B. eburneus	Ivory Barnacle
B. improvisus	Barnacle
Bathyplax typhla	Deep Water Crab
Benthesicymus cereus	Deep Water Shrimp
B. bartletti	Deep Water Shrimp
Calappa angusta	Deep Water Crab
C. flammea	Flame Crab
Callianassa islagrande	Ghost Shrimp
C. major	Ghost Shrimp
Cardisoma quanhumi	Land Crab
Chiridotea caeca	Isopod
Chthamalus fragilis	Barnacle
Clibanarius vittatus	Hermit Crab
Dromidia antillensis	Sponge Crab
Emerita talpoida	Beach Flea
Eurypanopeus depressus	Mud Crab
Gondactylus townsendi	Mantis Shrimp
Haustorius sp	Amphipod
Hepatus epheliticus	Crab
Hymenopenaeus robustus	Deep Water Shrimp
H. tropicalis	Deep Water Shrimp
Iridopagurus dispar	Hermit Crab
Lepidopa benedicti	Mole Crab
Ligyda baudiniana	Isopod
L. exotica	Isopod

L. olfersii	Isopod
Lysiosquilla excavatrix	Mantis Shrimp
Macrobrachium ohione	Fresh Water Shrimp
Menippe mercenaria	Stone Crab
Mithrax spinosissimus	Spider Crab
Munida forceps	Crab
M. irrassa	Crab
Neopanope texana	Mud Crab
Ocypode albicans	Beach Crab
Orshestia grillus	Beach Hopper
Ovalipes guadulpensis	Beach Crab
Pachygrapsus transversus	Crab
Pagurus annulipes	Hermit Crab
P. bonairensis	Hermit Crab
P. longicarpus	Hermit Crab
Palaemonetes intermedins	Shrimp
P. pugio	Shrimp
P. vulgaris	Shrimp
Panulirus argus	Spiny Lobster
Persephona punctata	Crab
Petrochirus diogenes	Hermit Crab
Petrolisthes armatus	Porcelain Crab
P. galathinus	Porcelain Crab
Pilumnus sayi	Crab
Porcellana sigsbeiana	Porcelain Crab
Portunus gibbesii	Swimming Crab
P. spinicarpus	Swimming Crab
Procambarus alleni	Swamp Crayfish
P. blandingi	White River Crayfish
Pylopagurus corallinus	Deep Water Hermit Crab
Ranilia muricata	Crab
Raninoides constricta	Crab
Sesarma curacaoense	Crab
S. reticulatum	Crab
Solenocera vioscai	-
Stenorynchus seticornis	Arrow Crab
Talorchestia longicornis	Beach Hopper
Thor floridanus	Shrimp
Tozeuma carolinensis	Bayonet Shrimp
Uca minax	Fiddler Crab
U. pugilator	Fiddler Crab
U. pugnax	Fiddler Crab
U. rapax	Fiddler Crab

PHYLUM ECHINODERMATA

CLASS ASTEROIDEA

STARFISH

Astropecten articulatus	Starfish
Echinaster sentus	Starfish
Goniaster tessellatus	Starfish
Luidia clathrata	Starfish
Numphaster arenatus	Starfish
Plinthaster dentatus	Starfish

CLASS ECHINOIDEA

SEA URCHINS

Arbacia punctulata	Sea Urchins
Calocidaris micans	Sea Urchins

Clypeaster subdepressus	Cake Urchin
Encope michelini	Large Sand Dollar
Eucidaris tribuloides	Slate Pencil Urchin
Lytechinus variegatus	-
Mellita quinquiesterforata	Small Sand Dollar
Moira atropos	Heart Urchin
Plagiobrissus grandis	Large Heart Urchin
Stylocidaris assinis	-

CLASS HOLOTHUROIDEA

Holothuria floridana	Sea Cucumbers

CLASS OPHIUROIDEA

BRITTLE STARS

Amphipolis gracillima	Brittle Star
Ophioderma brevispinum	Brittle Star
Ophiolephis elegans	Brittle Star
Ophiophragmus filogranus	Brittle Star
Ophiothrix angulata	Brittle Star

MISCELLANEOUS PHYLA

Stylochus frontalis	Flatworm (oyster worm)
Cerebratulus lacteus	Ribbon Worm
Batillipes mirus	Tardigrade
Phoronis architecta	-
Dallina floridana	Lamp Shell
Cryptopora gnomon	Lamp Shell
Bugula sp.	Bryozoan
Membranipora sp.	Bryozoan
Zoobotryon verticillatum	Bryozoan
Styella partita	Sea Squirt
S. plicata	Sea Squirt
Molgula manhattensis	Sea Squirt

ATTACHMENT P

Description and Charter

of

OCS RESEARCH ADVISORY BOARD

ATTACHMENT P

UNITED STATES
DEPARTMENT OF THE INTERIOR
Bureau of Land Management

OUTER CONTINENTAL SHELF RESEARCH ADVISORY BOARD

Establishment and Functions

This notice is issued in accordance with the provisions of 5 U.S.C. 552(a)(1), and section 9(a)(2) of the Federal Advisory Committee Act (Public Law 92-463). The Secretary of the Interior has established an Outer Continental Shelf Research Advisory Board after consultation with the Office of Management and Budget, in accordance with the provisions of the Federal Advisory Committee Act (Public Law 92-463). The Office of Management and Budget Committee Management Secretariat has authorized a 7-day period in lieu of the required 30-day period between Federal Register publication of the Board charter, and its filing as prescribed in Section 9(c) of Public Law 92-463. This Board will advise the Assistant Secretary - Land and Water Resources, the Director of the Bureau of Land Management, and other Departmental officers in matters related to environmental baseline and monitoring studies on the Federal Outer Continental Shelf lands. The Board charter is published in its entirety below. Further information regarding this document may be obtained from Mr. Frederick N. Ferguson, Assistant Solicitor - Minerals, Office of the Solicitor, U.S. Department of the Interior, Washington, D.C. 20240, telephone (202) 343-4325.

[redacted] C. WHITAKER

Under Secretary of the Interior

Date: MAR 20 1974

CHARTER

OUTER CONTINENTAL SHELF RESEARCH MANAGEMENT ADVISORY BOARD

1. There is hereby established, pursuant to the provisions of the Federal Advisory Committee Act (5 U.S.C. 1970 ed., Supp. II, App. I), an Outer Continental Shelf Research Management Advisory Board. The Board will advise officers of the Department in the performance of discretionary functions of the Department under the Outer Continental Shelf Lands Act (43 U.S.C. §§ 1331-1343) in connection with baseline environmental data gathering and environmental monitoring on the Outer Continental Shelf (OCS). The functions of the Board are solely advisory.

2. The objective of the Board is to advise the Assistant Secretary-Land and Water Resources, the Director, Bureau of Land Management (BLM) and other officers of the Department, in the design and implementation of environmental research projects related to oil and gas exploration and development on the OCS. The objectives of the OCS program are: (1) orderly resource development, (2) protection of the environment, and (3) receipt of fair market value. This Board through its advisory efforts will assist the Bureau in meeting objectives (1) and (2). In order to fully realize its potential, it is anticipated that the Board will be required for the duration of OCS environmental baseline research and monitoring studies, a period of approximately ten years. The Board will, however, terminate on December 31, 1975, unless prior

to that date it is renewed for an additional period by the Secretary of the Interior, acting within his discretion and in accordance with the provisions of section 14(a)(2) of the Federal Advisory Committee Act, supra.

3. The Board will report directly to the Assistant Secretary-Land and Water Resources. (a) The Assistant Secretary-Land and Water Resources shall, after consultation with the Assistant Secretary-Energy and Minerals and the Assistant Secretary for Fish, Wildlife and Parks, appoint an employee of the Department of the Interior as Chairman for the Board. The Assistant Secretary-Land and Water Resources shall be responsible for assuring that the Board operates within statutory and Departmental requirements for the management of advisory committees. The Director, BLM, shall provide administrative support. (b) Each of the following Departmental bureaus shall appoint one member to the Board: the Geological Survey, and the Bureau of Sport Fisheries and Wildlife. The Administrator of the Environmental Protection Agency and the Administrator of the National Oceanic and Atmospheric Administration may each appoint one member. (c) At the invitation of the Secretary of the Interior, the Governor of each State off the coast of which OCS research projects are scheduled may nominate for appointment by the Secretary one member who shall represent that State on the Board. Initially the Governors of Mississippi, Alabama, and Florida will be asked to nominate Board

members. As OCS research projects expand into other geographic areas the Governors of the respective States involved may be invited to nominate members for appointment to the Board. (d) Each Federal member shall serve until his resignation, the termination of the Board, or his removal by the officer appointing him. If the agency appointing a member removes that member, it may appoint another in his place. Each non-Federal member shall be appointed to serve a one-year term, but may be re-appointed for additional one-year periods if the OCS area seaward of his State is still under active research.

4. (a) Subject to the limitations imposed by this Charter, the Board may establish its own procedures for the conduct of business. To facilitate the performance of the Board's functions, the Chairman may establish committees composed of members of the Board. Most scheduled meetings will be of specific committees, but the Chairman will have the latitude to invite any individual State member to any committee meeting. (b) The Board shall prepare an annual report to the Secretary on the status of ongoing environmental OCS research. This report will be made available to the public.

5. The Chief Scientist for the BLM OCS environmental research program or a person designated by him will attend all Board and committee meetings and will assist the Chairman wherever possible.

6. The Board will meet at the call of the Chairman, who shall give at least fifteen day's notice in writing. The Board is expected to meet at least bi-annually. Meetings will be conducted in accordance with statutory and Departmental requirements for advisory committees as prescribed in 308 DM 2 of the Department of the Interior Manual. The estimated total annual operating costs of the Board are $10,000 and one man year of staff support.

7. The formation of this committee is determined to be in the public interest in connection with the performance of duties of this Department pursuant to statute as stated in paragraph 1 above. This Charter shall become effective April 1, 1974.

SIGNED, JOHN C. WHITAKER

Under Secretary of the Interior

Date: MAR 2 0 1974

GPO 875-502

ATTACHMENT Q

PERSONS WHO SUBMITTED ORAL AND/OR WRITTEN TESTIMONY FOR THE PUBLIC HEARING RECORD

Persons Who Submitted Oral and/or Written Testimony for the Public Hearing Record

	Name	Agency, Organization, Individual
1.	Hon James E. Fitzmorris, Jr.	Lt. Governor, State of Louisiana
2.	Hon. Ray T. Sutton	Commissioner of Conservation, representing Governor Edwin Edwards, State of Louisiana
3.	Dan Borne	Representing Senator Russell Long, State of Louisiana
4.	Jan Schoonmaker	Legislative Assistant, representing Congresswoman Lindy Boggs, State of Louisiana
5.	Ronald Menville	Representing Congressman Dave Treen, State of Louisiana
6.	Michael Bourgois	Representing Register Ellen Bryan Moore, Louisiana's State Land Office
7.	Robert A. Lafleur	Executive Secretary, Louisiana Stream Control Commission
8.	Dr. Lyle A. St. Amant	Assistant Director, Louisiana Wildlife and Fisheries Commission
9.	Dr. C. R. Brownell	Mayor, Morgan City, Louisiana
10.	Andrew Martin	Chairman, State Mineral Board, State of Louisiana
11.	Glynn Abel	Representing Mayor Kenny Bowen, Lafayette, Louisiana
12.	Hon. Warren J. Harang, Jr.	Mayor, Thibodaux, Louisiana
13.	Bob Oden	Executive Vice-President, Greater Lafayette Chamber of Commerce, Lafayette, Louisiana
14.	L. Wilson Trahin	Executive Vice-President, Morgan City Area Chamber of Commerce, Morgan City, Louisiana
15.	Robert L. Manard, Jr.	President, Chamber of Commerce of New Orleans, Louisiana
16.	James M. Cain	Vice-President--Administration, New Orleans Public Service, Inc. New Orleans, Louisiana
17.	Joe Tyson	Project Coordinator, Gulf Universities Research Consortium (GURC)
18.	R. W. Bybee	Operation Manager, Exploration Division, Exxon Company, U.S.A.
19.	Russell J. Judah	Representing Interstate Natural Gas Association of America
20.	Leslie Bowling	Representing Society of Independent Professional Earth Scientists
21.	R. R. Ricke	RepresentingSchlumberger, Inc.
22.	K. R. Joynt	Vice-President, Mobil Oil Corporation

	Name	Agency, Organization, Individual
23.	J. Berry St. John, Jr. P. D. Manning Dr. Wilson M. Laird J. O. Langley Lloyd G. Otteman Griff C. Lee Dr. Willis Pequegnat C. P. Besse	Offshore Operators Committee (Block Presentation)
24.	Merrill Smith	Secretary-Treasurer of the Executive Committee of Clean Gulf Associates
25.	Mr. Huff	Private Citizen
26.	Sam Allgood	Vice-President, Tidewater Marine Service, Inc.
27.	Otto Candies, Jr.	Vice-President, Otto Candies, Inc.
28.	Sam D. Warren	Assistant Area Manager, Baroid Division, N. L. Industries
29.	Ivan West	President, Harris Well Service, Inc.
30.	Richard L. Flowers	President, Creole Production Service, Inc.
31.	Kip Plaisance	Mayor, Golden Meadow, Louisiana
32.	James E. Coventon	Assistant to the Vice-President--Gas Supply of Transcontinental Gas Pipe Line Corporation
33.	D. R. Ward	Senior Group Vice-President, Brown & Root, Inc., Houston, Texas
34.	Wesley H. Mowery	Executive Vice-President, American Association of Petroleum Landmen, Fort Worth, Texas
35.	W. A. Hover	Pennzoil Company, Houston, Texas
36.	E. T. Robinson	President, Southern Gas Association, Dallas, Texas
37.	T. J. Burnett, Jr.	The Louisiana Land and Exploration Company, New Orleans, Louisiana
38.	Phil D. Helmig	Representing Allantic Richfield Company
39.	Dan B. Kelley	Vice-President, Trunkline Gas Company, Houston, Texas
40.	D. E. Steele	President, Cooper-Bessemer Company, Mt. Vernon, Ohio
41.	Petition	Sport Fishermen, Gulf Area
42.	L. C. Soileau, III	President, Chevron Oil Company, New Orleans, Louisiana
43.	J. H. Gibbons	Vice-President, Producing Department, Southeast United States, Texaco, Inc.
44.	W. A. Blankenship, Jr.	Division Landman, Amoco Production Company, New Orleans, Louisiana
45.	W. H. Baker	Director, Enviromental Affairs and Safety Department, Skelly Oil Company, Tulsa, Oklahoma

	Name	Agency, Organization, Individual
46.	Hon. F. Edward Herbert	Representative from the First Congressional District, Louisiana
47.	W. F. Dalton	President, Placid Oil Company, New Orleans Louisiana

WEST CAMERON AREA

ROCKEFELLER WILDLIFE REFUGE

PAUL J RAINEY WILDLIFE REFUGE

STATE WILDLIFE REFUGE

RUSSELL SAGE FOUNDATION STATE GAME REFUGE

POINT au CHIEN WILDLIFE MANAGEMENT AREA (STATE)

BOHEMIA WILDLIFE MANAGEMENT AREA

WEISNER WILDLIFE MANAGEMENT AREA

BRETON NATIONAL WILDLIFE REFUGE

MOBILE SOUTH NO. 1 ZONE 16

CHANDELEUR AREA

CHANDELEUR EAST ADDITION

BRETON SOUND AREA

MAIN PASS AREA EAST AND SOUTH ADDITION

MAIN PASS AREA

MOBILE SOUTH NO. 1 ZONE 16

SOUTH PASS AREA EAST ADDITION

EUGENE ISLAND AREA

SOUTH MARSH ISLAND AREA

SOUTH PELTO AREA

SOUTH PELTO AREA EAST ADDITION

SOUTH PASS AREA

SOUTH PASS AREA EAST ADDITION

SOUTH PASS AREA SOUTH ADDITION

WEST DELTA AREA WEST ADDITION

WEST DELTA AREA

WEST CAMERON AREA SOUTH ADDITION

EAST CAMERON AREA SOUTH ADDITION

EAST CAMERON AREA

SOUTH MARSH ISLAND

EUGENE ISLAND AREA SOUTH ADDITION

SOUTH MARSH ISLAND AREA SOUTH ADDITION

SOUTH PASS AREA SOUTH ADDITION

MOBILE SOUTH NO. 2 ZONE 16

NEW ORLEANS ZONE 15

GANDEY BANKS ZONE 13

NEW ORLEANS SOUTH NO. 1 ZONE 13

600 METERS

LEGEND

- SECTION 6 LEASE ACT
- SECTION 8 LEASE ACT
- EXPIRED LEASE
- SHIPPING SAFETY FAIRWAY
- SHIPPING SAFETY ANCHORAGE AREA
- PROPOSED TRACTS - SALE #36
- PROPOSED TRACTS - ROYALTY BIDS

This is a visual information map which has been prepared by the New Orleans Outer Continental Shelf Office (BLM) 08/1/73

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL AND GAS LEASE STATUS MAP CENTRAL GULF OUTER CONTINENTAL SHELF

REVISIONS
7-1-74

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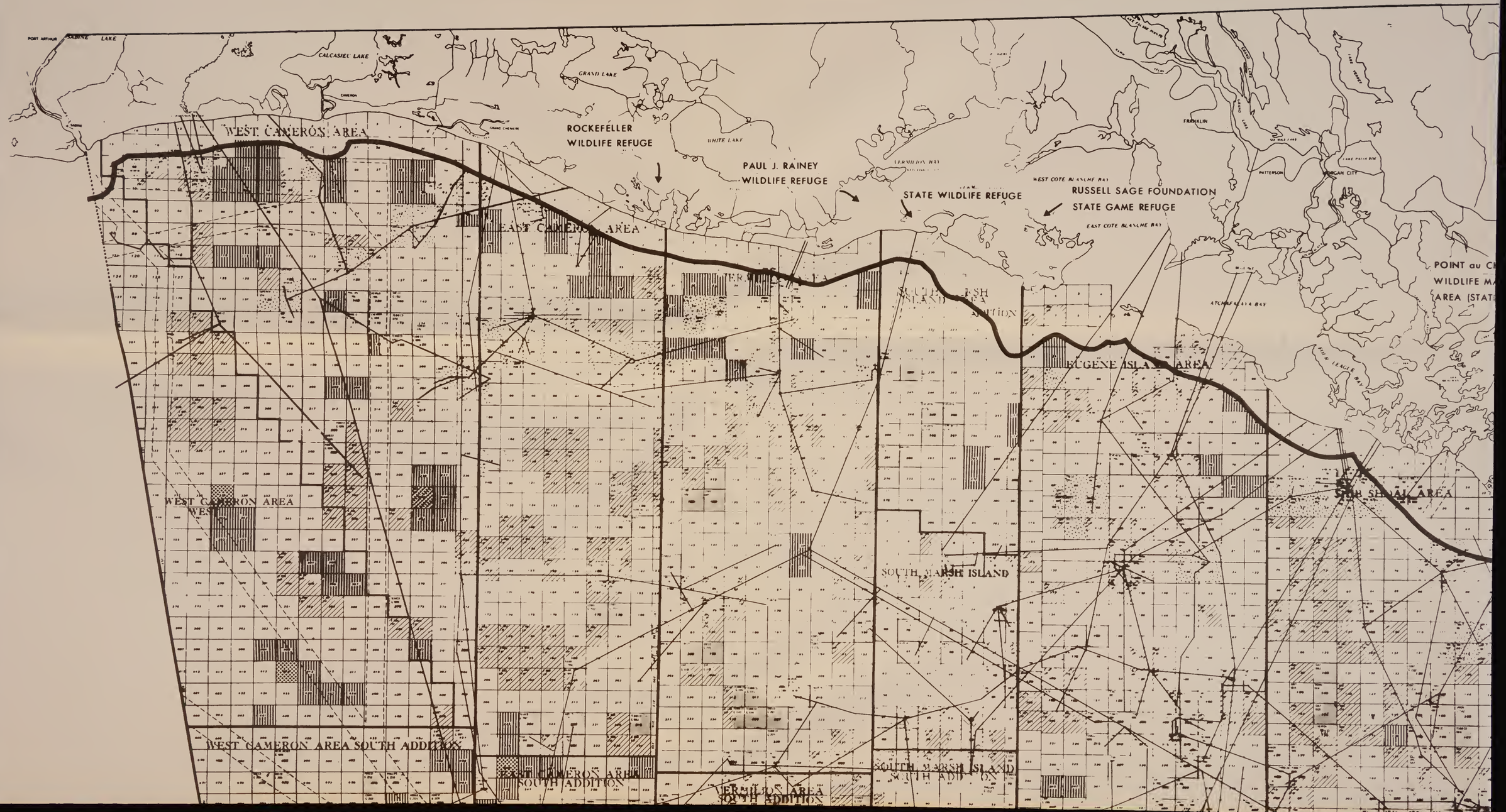
POINT ARTHUR
SABINE LAKE
CALCASIEU LAKE
GRAND LAKE
CAMERON
GRAND CHENIER
WHITE LAKE
VERMILION BAY
WEST COTE BLANCHE BAY
EAST COTE BLANCHE BAY
FRANKLIN
PATTERSON
MORGAN CITY
LAKE PALOURDE
ATCHAFALAYA BAY
WEST CAMERON AREA
EAST CAMERON AREA
ROCKEFELLER
WILDLIFE REFUGE
PAUL J. RAINEY
WILDLIFE REFUGE
STATE WILDLIFE REFUGE
RUSSELL SAGE FOUNDATION
STATE GAME REFUGE
POINT au CH
WILDLIFE MA
AREA (STAT
EUGENE ISLAND AREA
WEST CAMERON AREA
WEST
WEST CAMERON AREA SOUTH ADDITION
EAST CAMERON AREA
SOUTH ADDITION
SOUTH MARSH ISLAND
SOUTH MARSH ISLAND
SOUTH ADDITION
VERMILION AREA
SOUTH ADDITION

NEW ORLEANS

THIBODAUX

LOCKPORT

HOUMA

MONTEGUT

TERREBONNE BAY

TIMBALIER BAY

LAKE PELTO

BOHEMIA WILDLIFE MANAGEMENT AREA

WEISNER WILDLIFE MANAGEMENT AREA

BRETON NATIONAL WILDLIFE REFUGE

MOBILE SOUTH NO. 1 ZONE 16

CHANDELEUR AREA

CHANDELEUR EAST ADDITION

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MAIN PASS AREA

MOBILE SOUTH NO. 1 ZONE 16

SOUTH PASS AREA

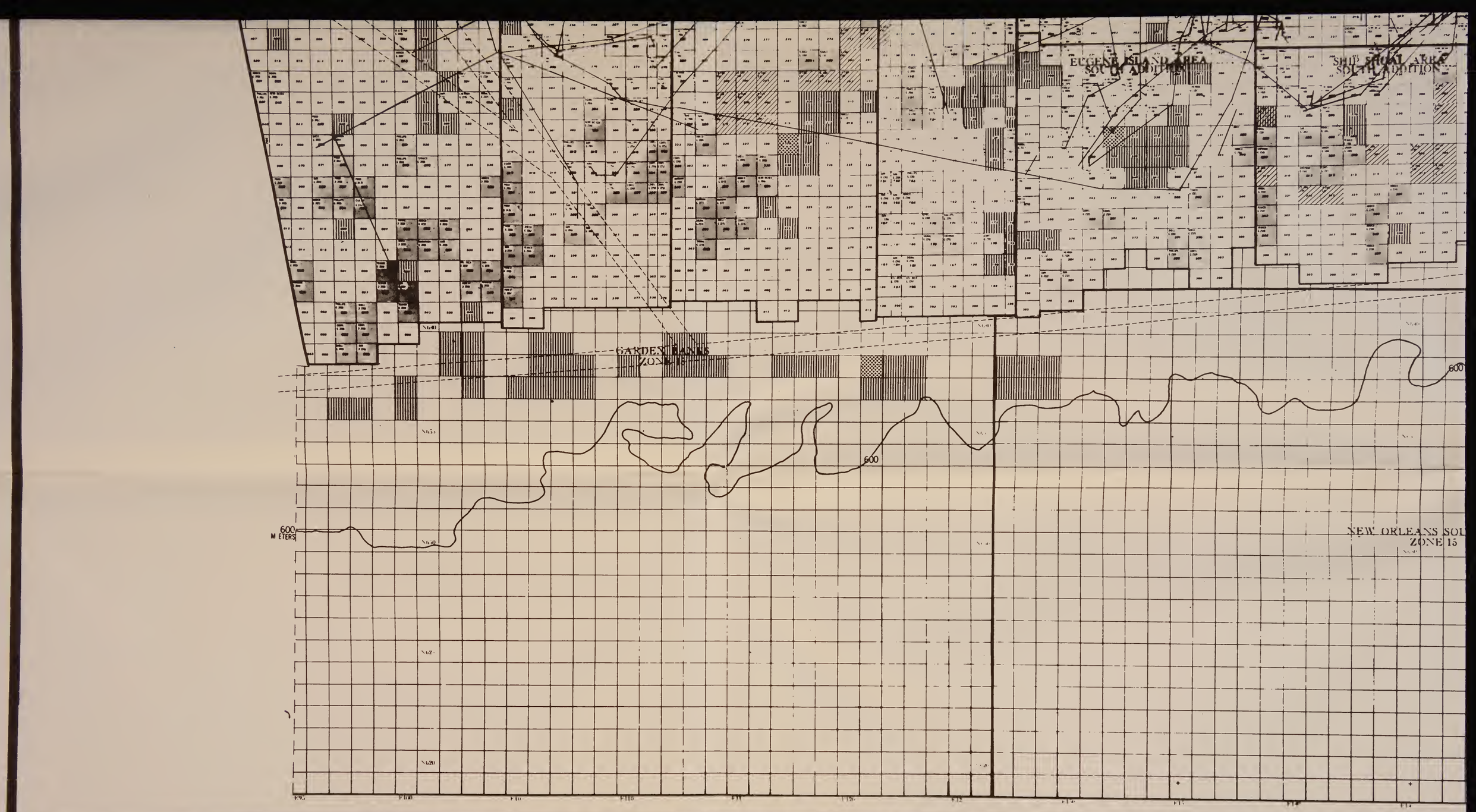
SOUTH PASS AREA EAST ADDITION

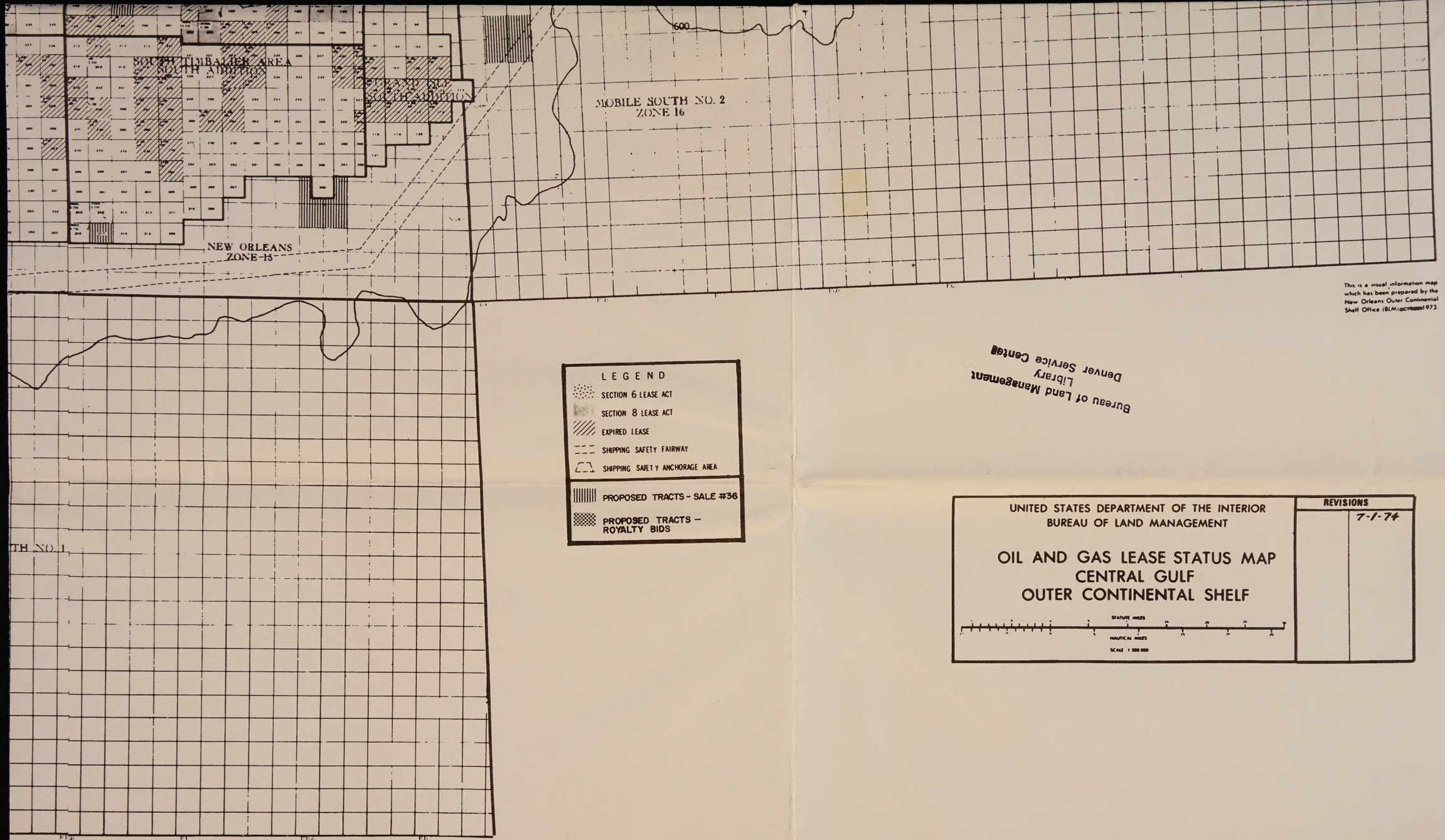
SOUTH PASS AREA ADDITION

WEST DELTA AREA SOUTH ADDITION

SOUTH PELTO AREA

EXP


EUGENE ISLAND AREA
SOUTH ADDITION
SHIP SHOAL AREA
SOUTH ADDITION
GARDEN BANKS
ZONE 15
NEW ORLEANS SOU
ZONE 15
600
600
600
METERS



LEGEND

- SECTION 6 LEASE ACT
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- EXPIRED LEASE
- SHIPPING SAFETY FAIRWAY
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BUREAU OF LAND MANAGEMENT

OIL AND GAS LEASE STATUS MAP
CENTRAL GULF
OUTER CONTINENTAL SHELF

STATUTE MILES
NAUTICAL MILES
SCALE 1:300 000

REVISIONS
7-1-74

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